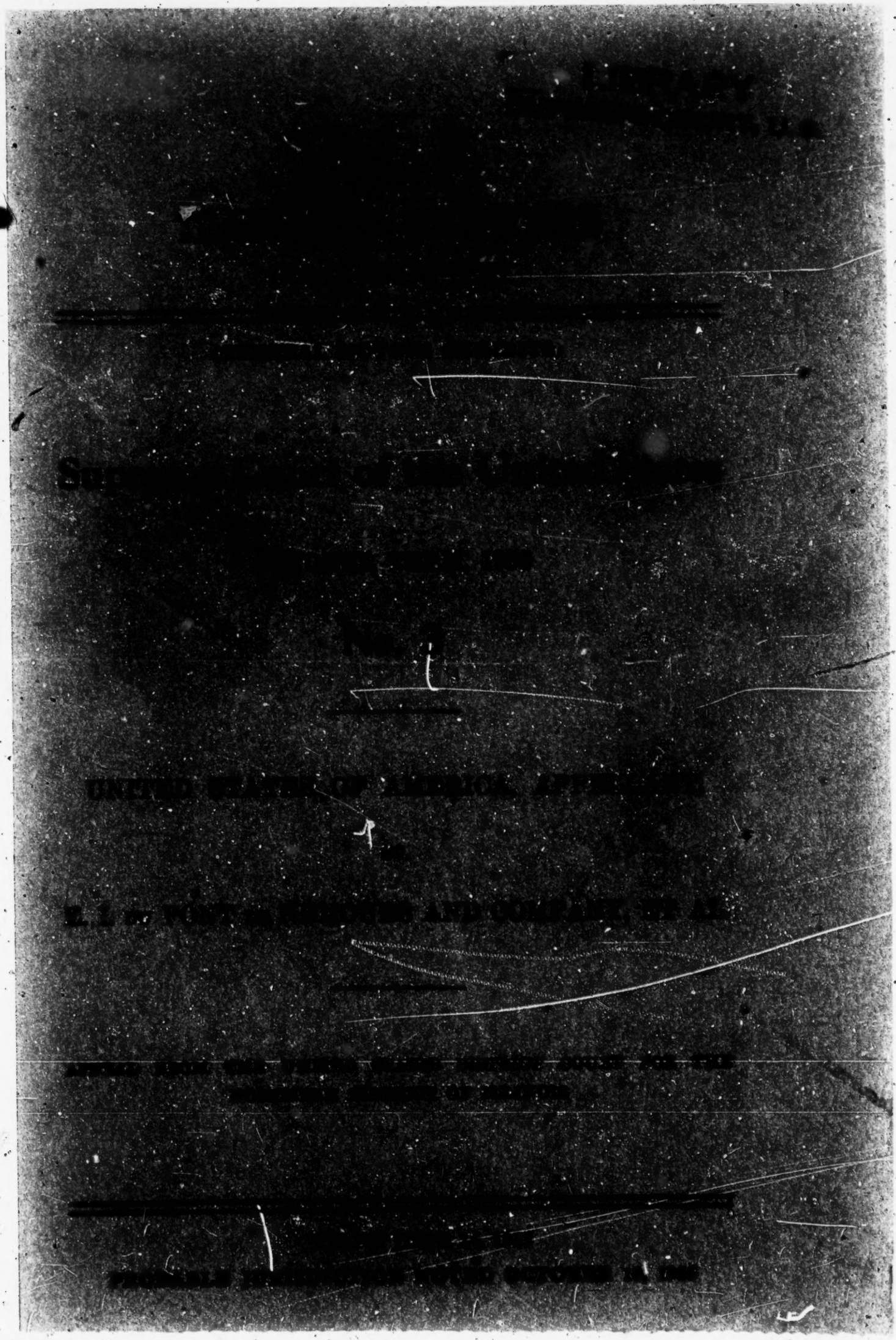


SUPREME COURT OF THE UNITED STATES

OCTOBER TERM, 1956

No. 3

UNITED STATES OF AMERICA, APPELLANT,

vs.

E. I. DU PONT DE NEMOURS AND COMPANY, ET AL.

APPEAL FROM THE UNITED STATES DISTRICT COURT FOR THE NORTHERN DISTRICT OF ILLINOIS

VOL. X

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sections within the central organization is a matter of future study, which at this time has not been attempted in detail.

For the purpose of a more simple presentation of the proposed organization, the following chief divisions have been made, each of which will be considered individually.

1. Major Control
2. Executive Control

—3—

Major Control

The term "Major Control" for the purpose of this study is specified as all authority down to but not including the President of the Corporation. The purpose of this control is to properly legalize the Corporation's primary organization, its financial structure and the general authority upon which its various executives maintain their functions. Also for the purpose of formulating policies along broad lines such as are of importance to the Corporation as a whole. The "Major Control" in the line of authority is specified as follows:—

1. Stockholders
2. Directors
3. (a) Finance Committee
   (b) Executive Committee

The functions of the elements entering into the "Major Control" as above specified are in common with all corporate enterprises, but in order to make this study complete, they may be briefly specified as follows:—

organization with the Corporation as a whole to the end that it will perform its necessary and logical place.

—2—

3. To centralize the control of all the executive functions of the Corporation in the President as its chief executive officer.

4. To limit as far as practical the number of executives reporting directly to the President, the object being to enable the President to better guide the broad policies of the Corporation without coming in contact with problems that may safely be entrusted to executives of less importance.

5. To provide means within each executive branch whereby all other executive branches are represented in an advisory way to the end that the development of each branch will be along lines constructive to the Corporation as a whole.

Having stated the principles upon which this study has been based and the objects that it is hoped to attain thereby, the proposed organization itself will now be considered. It has not been attempted in this study to do more than formulate the basic principles involved. No attempt has been made to enter into the organization of any specific operation or group of operations. The study has ended with the specifying of the functions of each operation or group of operations with relation to one another, it being recognized that the necessary organization within each operation is a matter exclusively within the province of the chief executive of that operation. It is also recognized that the development of the

General Motors Corporation

Study of Organization.

The object of this study is to suggest an organization for the General Motors Corporation which will definitely place the line of authority throughout its extensive operations as well as to co-ordinate each branch of its service, at the same time destroying none of the effectiveness with which its work has heretofore been conducted.

The basis upon which this study has been made is founded upon two principles, which are stated as follows:—

1. The responsibility attached to the chief executive of each operation shall in no way be limited. Each such organization headed by its chief executive shall be complete in every necessary function and enable to exercise its full initiative and logical development.

2. Certain central organization functions are absolutely essential to the logical development and proper control of the Corporation's activities.

Having established the above principles as fundamental, and it is believed that all interests within the Corporation agree as to such principles, the definite objects which it is hoped to attain by this study, are enumerated as follows:—

1. To definitely determine the functioning of the various divisions constituting the Corporation's activities, not only in relation to one another, but in relation to the central organization.

2. To determine the status of the central organization and to co-ordinate the operation of that central

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Defendants' Exhibit No. 300

GENERAL MOTORS CORPORATION

STUDY OF ORGANIZATION

Defendant's Exhibit (GM) No. 1

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General Motors Corporation

Organization Study

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No. 271—Letter dated July 9, 1926, from T. B. Huff to E. W. Webb	5216	7415
No. 272—Letter dated August 26, 1926, from "President" to T. B. Huff	5217	7416
No. 273—Letter dated October 7, 1926, from "President" to Harold H. Healy	5219	7418
No. 274—Letter dated April 21, 1927, from Frank A. Howard to William Benham (Department of Justice)	5222	7421
No. 277—Letter dated July 2, 1936, from Cesare Protto (du Pont) to E. W. Webb	5235	7434
No. 278—Letter dated February 8, 1938, from "Edward" to E. I. du Pont de Nemours & Company	5237	7436
No. 279—The Dow Chemical Company Research Report on Lead Tetraethyl Process	5238	7437
No. 280—The Dow Chemical Company Research Report on Tentative Process for Tetra Ethyl Lead	5256	7455
No. 281—United States Letters Patent No. 1,805,756	5265	7464
No. 282—Dow Chemical Company Report dated April 18, 1931	5271	7470
No. 283—Unsigned, undated "Memorandum"	5272	7471
No. 284—Memorandum re "Reasons why we should not manufacture lead tetra ethyl and reasons why we should manufacture tetraethyl lead" dated June 28, 1926	5274	7473

General Motors Exhibits	Original	Print
No. 237—Extract from minutes of the meeting of the Executive Committee (GMC) August 8, 1930	5098	7300
No. 238—Extract from minutes of meeting of the Finance Committee (GMC) September 8, 1930	5099	7301
No. 239—Letter dated August 25, 1931, from E. G. Robinson (Kinetic Chemicals, Inc.) to J. L. Pratt	5102	7304
No. 240—Letter dated August 28, 1931, initialled JLP to E. G. Robinson	5105	7307
No. 241—Excerpts from an address by C. F. Kettering	5106	7308
No. 242—Letter dated April 16, 1919, from Frank A. Howard to E. M. Clark	5111	7313
No. 243—Letter dated August 15, 1919, unsigned, to John Marshall (du Pont)	5115	7317
No. 244—Letter dated December 23, 1919, from E. H. Kelly (GMC) to W. C. Durant	5120	7322
No. 245—Letter dated April 8, 1920, from F. O. Clements to C. F. Kettering	5123	7325
No. 246—Letter dated November 19, 1921, from L. du Pont to C. F. Kettering	5126	7328
No. 246a—United States Letters Patent No. 1,787,419	5128	7330
No. 247—Telegram dated August 23, 1922, from "Midgley" to Doctor E. H. Bolton (du Pont)	5130	7332
No. 248—Telegram dated August 24, 1922, from W. S. Harrington to Midgley	5131	7333
No. 249—Telegram dated August 25, 1922, from W. F. Harrington to Midgley	5132	7334
No. 250—Letter dated November 13, 1922, from Norman Roberts to Thomas Midgley, Jr.	5133	7335
No. 251—Letter dated November 18, 1922, initialled TM to Dr. Norman Roberts	5136	7338
No. 252—Memorandum dated November 20, 1922, from Thomas Midgley to C. F. Kettering	5137	7339
No. 253—Letter dated December 18, 1922, from Walter G. Whitman (Massachusetts Institute of Technology) to Thos. Midgley, Jr.	5140	7342
No. 254—Letter dated Nov. 30, 1922, from E. Krause (Institute of Technology—Berlin) to "Esteemed Herr Professor"	5141	7343
No. 255—Memorandum dated February 2, 1923, from T. Midgley, Jr. to C. F. Kettering	5143	7345
No. 256—Memorandum dated April 9, 1923, by Thomas Midgley, Jr. re Atlantic Refining Company	5144	7346
No. 256A—United States Letters Patent No. 1,697,245	5149	7351
No. 257—Memorandum dated November 26, 1923, from J. H. Senior, et al. to E. M. Clark, et al	5151	7353
No. 258—Memoradum dated June 18, 1924, (unsigned)	5154	7356
No. 259—Memorandum dated June 18, 1924, initialled EMC	5157	7358

General Motors Exhibits	Original	Print
No. 213—Letter dated September 28, 1931, from Mason V. Hanger Company (signature illegible) to John L. Pratt	5064	7266
No. 214—Letter dated September 30, 1931, initialled JLP to Silas B. Mason	5065	7267
No. 215—Letter dated September 30, 1931, initialled JLP to Edward F. Fisher	5066	7268
No. 216—Letter dated October 16, 1931, from E. F. Fisher to J. L. Pratt	5067	7269
No. 217—Letter dated May 27, 1926, from Pierre S. du Pont to John L. Pratt	5068	7270
No. 218—Letter dated June 8, 1926, initialled JLP to P. S. du Pont	5069	7271
No. 219—Letter dated September 16, 1926, initialled LduP to Alfred P. Sloan, Jr.	5070	7272
No. 220—Letter dated September 20, 1926, from Alfred P. Sloan, Jr. to Lammot du Pont	5071	7273
No. 221—Letter dated September 28, 1926, from J. L. Pratt to Lammot du Pont	5072	7274
No. 222—Letter dated September 30, 1926, initialled LduP to John Pratt	5074	7276
No. 223—Letter dated October 1, 1926, from J. L. Pratt to Lammot du Pont	5075	7277
No. 224—Letter dated September 22, 1926, from Lammot du Pont to John Pratt	5077	7279
No. 225—Letter dated October 2, 1926, initialled JLP to Lammot du Pont	5079	7281
No. 226—Letter dated October 25, 1926, initialled JLP to Lammot du Pont	5081	7283
No. 227—Letter dated January 29, 1931, from "Chairman of the Board" initialled LduP to John Pratt	5082	7284
No. 228—Letter dated February 6, 1931, from J. L. Pratt to Lammot du Pont	5084	7286
No. 229—Extract from Minutes of Executive Committee Meeting (GMC) January 21, 1932	5087	7289
No. 230—Letter dated August 12, 1926, from W. F. Harrington to John L. Pratt	5089	7291
No. 231—Letter dated August 13, 1926, initialled JLP to W. F. Harrington	5091	7293
No. 232—Letter dated December 29, 1925, initialled JLP to W. B. Foster (du Pont)	5092	7294
No. 233—Letter dated July 31, 1929, from E. G. Biechler to J. L. Pratt	5093	7295
No. 234—Letter dated August 2, 1929, initialled JLP to E. G. Biechler	5094	7296
No. 235—Letter dated September 28, 1931, from E. G. Biechler to J. L. Pratt	5095	7297
No. 236—Letter dated October 6, 1931, from W. F. Harrington to John L. Pratt	5097	7299

General Motors Exhibits

	Original	Print
No. 190—Agreement dated January 1, 1931, between E. I. du Pont de Nemours & Company and General Motors Corporation	5022	7224
No. 191—Letter dated June 27, 1928, from James Lynah to William Richter (du Pont)	5026	7228
No. 192—"Performance of Quantity Discount Contracts" as of October 31, 1927	5027	7229
No. 193—Letter dated May 16, 1928, from O. H. Briggs to James Lynah	5029	7231
No. 194—Letter dated May 18, 1928, from James Lynah to O. H. Briggs	5030	7232
No. 195—Memorandum dated February 18, 1919, from R. R. M. Carpenter to P. S. du Pont	5031	7233
No. 195A—Excerpt from The New York Times, Sunday, March 21, 1920	5033	7235
No. 195B—Excerpt from The New York Times, Tuesday, March 23, 1920	5034	7236
No. 196—Excerpts from Memorandum re Meeting between President and Plant Managers, December 1, 1920 (GMC)	5035	7237
No. 199—Excerpt from Minutes of General Purchasing Committee meeting September 30, 1926	5042	7244
No. 200—Memorandum dated January 20, 1928, from Alfred P. Sloan to J. L. Pratt	5043	7245
No. 201—Memorandum dated January 21, 1928, from J. L. Pratt to Alfred P. Sloan, Jr.	5044	7246
No. 202—Letter dated October 23, 1922, from F. S. MacGregor to J. L. Pratt	5048	7250
No. 203—Letter dated November 1, 1922, from "General Manager, Accessory Divisions" to H. J. Forsythe (Hyatt Bearings Division)	5049	7251
No. 204—Letter dated January 9, 1926, from Jim Elms to J. L. Pratt	5050	7252
No. 205—Letter dated January 27, 1926, from E. G. Biechler (Delco Light) to J. L. Pratt	5053	7255
No. 206—Letter dated July 16, 1926, from "Vice President" to J. J. Moosman	5054	7256
No. 207—Letter dated Juy 23, 1926, from J. J. Moosman to John L. Pratt	5055	7257
No. 208—Letter dated July 29, 1926, from J. J. Moosman to John L. Pratt	5057	7259
No. 209—Letter dated August 17, 1926, from J. J. Moosmann to John L. Pratt	5058	7260
No. 210—Letter dated August 20, 1926, from "Vice President" to J. J. Moosmann	5060	7262
No. 211—Letter dated January 31, 1929, from "Vice President" to Ed J. Fisher	5061	7263
No. 212—Letter dated February 8, 1929, from E. F. Fisher to J. L. Pratt	5062	7264

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Stockholders

Elect the Board of Directors—legalize the Articles of Incorporation and the By-laws of the Corporation—Authorize capital stock issues and perform all other functions incident to stockholders of any corporation.

Directors

Formulate in a broad way the policies of the Corporation —Approve the acts of the various committees and of the principal executive officers—Elect the Chairman of the Board and the President of the Corporation—Elect the Finance and Executive Committees—Recommend to the stockholders changes in organization necessitating alteration of the Articles of Incorporation and the By-laws—Provide for the issuance of securities—Make recommendations to the stockholders incident to same—Perform such other acts as are customarily within the duties of the Directors of Corporate enterprises, including the declaration of dividends.

Finance Committee

Formulates the entire financial policy of the Corporation, subject to the approval of the Board of Directors and where necessary, of the stockholders. Has general control over all the finances of the Corporation, together with the general accounting incident to same—Recommends to the Directors dividend policies of the Corporation for their approval—Passes on appropriations covering capital investments as may be recommended by the Executive Committee.

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Executive Committee

Has entire supervision over the operations side of the Corporation's activities, constituting as a whole practically the entire operating staff. Each operation on the operating staff is represented in the Executive Committee. Major operations by a single representative, smaller operations being grouped together, one executive representing several such minor operations. The executive Committee passes on appropriations recommended by the Appropriations Committee and through its own deliberations or through Committees appointed for special study determines the broad policies of the Corporation so far as they affect one or more operations. Specific questions relating to one operation are not in general matters for the Executive Committee but are determined by the Chief executive of that particular operation through consultation with the President.

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Executive Control

All executive functions within the Corporation necessary to carry out the policies of the Major Control as represented by the Board of Directors together with the Finance and Executive Committees pass through the executive staff for execution.

The President of the Corporation has the entire responsibility of properly interpreting the policies formulated by the Major Control and distributing them through the organization in such a manner as he may elect. To assist

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the President in executing the policies formulated as above described, the following organization is provided.

1. Operation Staff
2. Finance and Accounting Staff
3. General Advisory Staff
4. President's Personnel Staff

These various staffs are independent in their relations one to another so far as actual authority is concerned. Such relations as may exist between the various staffs or parts thereof are subject to specification by the President of the Corporation. Each staff has its own functions to perform which are absolutely independent in character so far as these particular functions are concerned. The detailed powers and responsibilities of the executive staffs are described individually.

Each unit under the jurisdiction of the Corporation constitutes an operation and is a part of the operations staff. Such operations as are of major importance in character are represented by an executive officer who has no other duties to perform other than that particular operation. Other operations of less importance may be and should be grouped together. Such grouping has the advantage of limiting the number of executives reporting directly to the President of the Corporation to the end that the President may be better enabled to guide the broad policies of the Corporation without coming in contact with details that may be safely entrusted to executives of less importance. In the matter of grouping manifestly operations which have certain common characteristics should be placed together for the purpose of more effective handling. In the groupings recom-

mended in this study consideration has been given to three factors.

1. Operations having both commercial and manufacturing problems and that distribute part of their products outside of the Corporation itself.

2. Operations which from the manufacturing standpoint present similar problems and have no outside commercial relations.

3. Operations which might be more effectively grouped geographically.

All policies pertaining to each individual major unit are within the jurisdiction of the General Manager of that unit who is next in authority to the President of the Corporation. The General Manager formulates all the policies of his particular unit subject only to the executive control of the President. The responsibility of the head of each unit is absolute and he is looked upon to exercise his full initiative and ability in developing his particular operation to the fullest possible extent and to assume the full responsibility of success or failure. All detailed policies no matter how complex or broad same may be within any division, are absolutely determined by the General Manager of that division. Where units are grouped in accordance with the above principles, each group is subject to executive control as a group, usually by a Vice President of the Corporation. All questions of policies which the General Manager of the individual operations desire advice concerning or support on, are taken up with the executive in charge of that particular group, thus further relieving the President of the Corporation.

Having specified in a general way the functions of the Operations Staff and outlined the principles upon which the grouping within that staff should be determined, the following groupings or sub-divisions are suggested.

1. Motor Car Group
2. Accessory Group
3. Parts Group
4. Miscellaneous Group

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Motor Car Group

The first group to be considered in these divisions which manufacture and sell complete motor cars—purchasing part of the component parts from outside sources; part from other divisions of the Corporation and manufacturing part with their own facilities. These divisions in general sell none of their products except incidentally to other divisions of the Corporation. Their products pass entirely outside of the Corporation's control. Each of these divisions is absolutely independent in character and is presided over by a chief executive who is a Vice President of the Corporation. Each of the executives supervising these major units are responsible alone to the President of the Corporation who formulates in connection with the chief executive the policies of that particular division and matters affecting all phases of its work. The motor car units included in this group are listed as follows:—

1. Oakland Motor Division
2. Buick Motor Division

3. Cadillac Motor Division
4. Olds Motor Division
5. Chevrolet Motor Division
6. General Motors Corporation, Canada
7. General Motors Truck Division
8. Scripps-Booth Division

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Accessory Group

The second group to be considered is the Accessory Group. Within this group is included all the operations of the Corporation which pertain to what might be called accessories. In suggesting the specific list of operations under this Group, consideration has been given not to the geographical location of such properties but rather to the fact that 60% of their production passes to interests outside of the Corporation's own divisions. This results in common problems such as sales and advertising policies, competitive conditions, proper placing of Corporation's capital to affect the best results to the Corporation as a whole and many other questions of a Commercial nature which do not enter into the other operations within the Corporation. The head of the Accessory Group is a Vice President of the Corporation and is absolutely responsible to the President for the operation of the specific properties included within this group. The relations of this executive to the heads of the individual units within the group is similar to the relation of the President of the Corporation to the executive in charge of a single major unit. The responsibility for each unit lies as before, absolutely in

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the General Manager or chief executive of that specific operation; the function of the Vice President in charge of this group being entirely advisory and for the purpose of reflecting to the various operations individually the policy of the President of the Corporation and of the Directors, Finance and Executive Committees or of the Major Control. The specific operations included in the Accessory Group are listed as follows:—

1. Hyatt Bearings Division
2. Remy Electric Division
3. Maxon Steel Products Division
4. Dayton Engineering Laboratories Co.
5. Harrison Radiator Division
6. Lancaster Steel Products Division
7. New Departure Mfg. Division
8. United Motor Service Inc.
9. Domestic Engineering Company
10. Klaxon Company
11. Champion Ignition Company
12. Novelty Incandescent Lamp Company.

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Parts Group

The third group to be considered constitutes these operations which manufacture components parts. Largely to be consumed within the Corporation's own divisions, involving therefore no commercial relations with outside interests. There are manifestly no sales problems incident to such operations. The question of price and the passing of ma-

terials from such divisions to other divisions is a matter of general policy outlined by the Major Control and subject to the jurisdiction of the President. The divisions in this group are production or manufacturing operations, pure and simple, and are organized separately, rather than connected with a major division, for the purpose of economy or convenience in manufacture. In certain instances such operations produce almost exclusively for one division. In other instances they manufacture for one or more. The conditions so far as control are concerned, are similar in each.

It is recommended that there be constituted three groups of such properties, each group to be headed by a General Manager of the group. Each operation within the group being headed likewise by a General Manager of that particular operation. The responsibility of the group lying entirely with the General Manager of that group who is responsible directly to the President of the Corporation. The responsibility for the success or failure of each individual operation within the group lies entirely as with every other operation, be it great or small, with the General Manager of that particular operation who formulates all the detailed policies subject only to control in an advisory way by the General Manager of the group.

It is recommended that this class of operation be divided geographically, grouping those divisions within a limited area for the convenience and more effective control of the group. Following this plan, three sections are created, listed as follows:—

1. Saginaw Parts Section
2. Detroit Parts Section
3. Muncie Parts Section

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The specific operations constituting each group are listed as follows:—

1. Saginaw Parts Section
   a. Saginaw Products Company
   b. Central Foundry Company
   c. Saginaw Malleable Company
   d. J.C.M.Company #2

2. Detroit Parts Section
   a. Central Gear Company
   b. Central Axle Company
   c. Northway Motor Company
   d. Central Forge Company
   e. Canadian Products Company

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3. Muncie Parts Section
   a. Muncie Products Company
   b. T.W.Warner Company

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Miscellaneous Group

The fourth group to be considered is the Miscellaneous Group. In addition to the three groups of operation described above, there are other units which, for various reasons, must necessarily be considered independently but which so far as general policies are concerned, are identical. The principles adopted in this grouping are as follows:—

1. Those operations in process of development.

2. Those not logically within the previously described group. The list of operations in this grouping are at present as follows:—

Frigidaire Corporation—This property is in process of development and has not yet entirely reached the operative stage. It is recommended that this be placed under the direct supervision of the President although the relations between the General Manager of this operation and the President are exactly the same as in other operations.

Samson Division. This division should include the tractor and agricultural properties and developments of the Corporation that are being formulated and in process of organization at the present time. While it undoubtedly will be desirable due to the enormous ultimate magnitude of this development to constitute it as one major group, presided over by a Vice President of the Corporation reporting to the President, during the formulative stage, this operation is placed under the direct supervision of the President and should be operated in such a manner as he may specifically determine.

General Motors Export Company. As its name signifies, this operation constitutes the expert agency for the sale of all the Corporation's products in foreign countries.

General Motors Acceptance Corporation. This operation is of a financial nature and provides for the financing of the sale of the Corporation's products where it is necessary to provide credits.

The above completes the functions and classification of the Corporation's staff.

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General Financial & Accounting Staff

The General Financial and Accounting Staff constitutes the central organization of accounting and is under the direction of a Vice President of the Corporation who is also Chairman of the Finance Committee. This executive officer, through the necessary organization, performs all financial and accounting functions that pertain to the Corporation as a whole. It is recommended that the accounting within each individual unit be subject to the complete control of the Chief executive of that unit in line with all functions within a single operation. Where certain units have been grouped together under one executive there is no accounting common to such groups—all accounting being either within a specific operation and subject, as before stated, to the chief executive of such operation, or in the general financial and accounting organization.

The necessary co-ordination between the Vice President in charge of this executive branch or staff and the accounting within each unit is through the President, to the chief executive of such unit or group of units in case there are one or more units under a single executive. All finances and accounting pertaining to the Corporation as a whole, such as the designation of banks of deposit; handling of surplus funds, payment of dividends, matters pertaining to stock records and transfers;payment of taxes against the Corporation as a whole and all such general financial and accounting functions are within the province of the general financial and accounting staff. As stated in the beginning of this study, no attempt has been made to designate details, that being a matter to be determined as circumstances may

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best designate, all within the province of the chief executive of the particular work in question.

Recognizing the desirability of proper co-ordination between the various executive staffs, a General Accounting and Finance Advisory Committee is recommended. This Committee to consist of the Vice President in charge of the General Financial & Accounting Staff as Chairman, with the President of the Corporation ex-officio and with such other members, preferably two, as the President may designate, preferably two Vice Presidents of the Operation Staff best qualified to consider financial matters pertaining to operations as well as general financial control. The object of this Advisory Committee is to co-ordinate the needs of the central financial and accounting organization with the individual operations in order to develop a policy which will work to the best interest of the Corporation as a whole, also to interpret to the financial and accounting staff the needs and viewpoint of the operations staff.

General Advisory Staff

It is stated at the beginning of this study that one of the principles upon which it has been developed has been that certain central organization functions were essential to the logical development of the Corporation's activities. This central organization has been termed the General Advisory Staff.

The General Advisory Staff is to constitute in reality a group of organizations or departments, large in some cases, small in others, depending upon the necessity of each individual line of work. The purpose of this staff is to advise the chief executives of the Operation Staff concerning prob-

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lems of technical and commercial nature which are themselves so broad and require so much study as to be outside of the scope of a single operation and which will be, when developed, of importance in the guidance of all operations. The Advisory Staff is practically consultant to the Operation's Staff and while it may develop and disseminate information and data to the Operation's Staff and stands ready to be called upon for advice on such functions as it may be in a position to furnish to the Operation Staff, the Operation Staff, as has been previously stated, is independent and may accept or reject the advice of the Advisory Staff as its judgment may dictate, subject to the general supervision of the President. All functioning between the General Advisory Staff and the head of each operation or group of operations on the Operation's staff, takes place through the President of the Corporation, subject of course to such modifications as he may elect. All recommendations or advice on the part of the General Advisory Staff may be made obligatory on the Operation's Staff or any part thereof only when made so by the direct action of the President of the Corporation, either in an individual case or as a part of the general line of policy.

The control of the General Advisory Staff is under a chief executive who is a Vice President of the Corporation. He is supported by such assistants as he may designate who together with the Staff Secretary constitutes the executive side of the General Advisory Staff. Advisory to the Vice President if the General Advisory Staff Committee of which the Vice President is Chairman and of which the President of the Corporation is a member ex-officio. It is recommended that there should be at least two additional members of this committee, preferably two Vice Presidents

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of the Operations Staff best qualified to handle matters of this character. The object of this Advisory Committee is to coordinate the functions of the Advisory Staff with the Operations Staff so that the developments of the Advisory Staff may be along lines which will be considered constructive from the Operations Staff viewpoint to the end that the best results to the Corporation as a whole may be obtained.

Having determined the general organization of the General Advisory Staff, there will now be designated the individual departments or organization constituting that staff. As already stated, these divisions may be greater or less both in magnitude and scope of functions, depending upon the policy to be pursued. The particular departments or sections recommended as desirable with the functions of each are briefly described as follows: (Attention is called to the fact that as with other individual departments or operations, an organization within such division or operation has not been attempted, that being left to future study.)

1. Purchasing Section. This section is to study source of supply, tendencies in prices of materials in general use by the Corporation, especially those applicable for forming a basis for general contracts such as various kinds of steel, brass, and copper, lumber, ties, fuel and all other materials that can be treated in a general way whether in the raw state or finished. Also to co-ordinate the purchasing of the various individual purchasing departments with a view to getting the greatest benefit possible for the Corporation as a whole.

2. Engineering & Research Section. This section to act in an advisory way to the engineering departments of the individual units with a view to disseminating information

throughout such various departments as will be of interest to all: To undertake research work on broad fundamental questions that would, from the standpoint of expense, capability or from the standpoint of organization be beyond the province of any individual operation. To examine and report upon new inventions submitted to the Corporation for consideration. To undertake the development of new devices as would be required in a broad way by one or more of the operating divisions. To develop the necessary designs of new products which the Corporation may elect to undertake. In no sense shall the engineering and research section supersede the functions of the engineering departments of any individual operation.

3. Plant Engineering Section. This section to undertake the design of all building structures including factory and office buildings, power houses, foundries, including construction thereof; also the construction, together with the equipment thereof, of such power houses as may be essential to the Corporation's operations. In connection with the construction of power houses, to supervise in an advisory way the operations of same. In connection with the functioning of this section, while the staff should be under the supervision of the Vice President in charge of the General Advisory Staff, the personnel should be co-ordinated with that of the DuPont Engineering Company to the end that the maximum efficiency to both this section and the DuPont Engineering Company may be obtained.

4. Manufacturing & Plant Layout Section. This section to advise as to the proper layout of new manufacturing units and in the development of additions to existing units. To investigate the merits of new devices and methods for

manufacturing and to disseminate information pertaining to such developments through the various operations. To develop statistical data pertaining to methods and devices used in a general way by various operating divisions to the end that the most effective methods may be developed and used by all operations alike. To become acquainted with the manufacturing methods of all divisions to the end that the best method in use may be recommended to all divisions so that such methods may be standardized throughout all divisions with the resulting economy and efficiency possible. To design and develop special machinery resulting in economical production of parts in general use by the Corporation.

5. Patent Counsel. To handle in a general way the needs of the various operations so far as patent matters are concerned. To advise with the manufacturing and engineering section of the General Advisory Staff on matters pertaining to new developments and to take the necessary patent action in conjunction with such developments. To co-ordinate the methods, policies and work of the patent departments of the individual operations where it is found desirable. To study into patent matters effecting the interests of the Corporation as a whole on broad problems. To recommend personnel for the patent departments of individual operations where desired. To maintain a complete record of all patents owned by the Corporation. To have a record of all royalty contracts and to authorize the payments of same. The patent department should have as advisory, one or more patent counsel of international reputation for advice and counsel on important matters.

6. Legal Section. To advise with the sections of the General Advisory Staff or any other executive staff or operation within the Corporation on matters pertaining to legal questions that may arise.

7. Insurance Section. To advise all operations within the Corporation's control concerning matters pertaining to all kinds of insurance—fire, liability, boiler, theft, etc. To maintain a complete record as to the policies existing to cover such insurance. To study all matters pertaining to insurance to the end that the broadest protection is given to the Corporation's interests at the minimum expense. In the event that the Corporation undertakes to carry its own insurance of any nature, it should be within the province of this section or unit to work out and manage such operation.

8. Real Estate Section. To act as advisory to the Operations Staff or any section of the General Advisory Staff on all matters pertaining to real estate other than that controlled by each individual unit. The functions of this section would be to study the developments of real estate in all cities in which the Corporation is interested. To advise upon request, as to best location. To arrange for the erection of buildings or the purchase of real estate and to perform all other functions pertaining to real estate. To exercise supervision and direction of the following sub-divisions:—

a. Durant Building Section. To supervise the construction of the Durant Building including the power house incident to same. Upon the completion of this operation it will be turned over to the general office building section for operation.

b. General Office Supervision. To have the management from the operation standpoint of all general office buildings located in Detroit, New York or otherwise. To control the renting of such space within such buildings as may not be necessary for the use of the Corporation itself.

c. Housing Operations Section. To control all housing operations undertaken by the Corporation irrespective of location, including the preparation of plans for sale; design of houses and like questions.

9. Development Section. To study questions pertaining to the development of the Corporation's activities not at present represented on its Operations Staff with a view to increasing its profits by the manufacture of parts previously purchased or the supplementing of its present operations by entering entirely new lines of development. To undertake the investigation of properties that would be desirable for the Corporation to acquire, through purchase or otherwise.

10. Traffic & Tariff. To advise the Operations Staff regarding all matters pertaining to traffic. To study, and to represent the Corporation before transportation authorities with a view to concentrating the influence of the Corporation on any desirable project. To check freight bills of the individual operations, if desired. To prosecute cases before the Interstate Commerce Commission or as may be otherwise provided pertaining to inequality of rates or discrimination against any of the products or interests of the Corporation.

11. Inter-division Schedule. To develop with the co-operation of the individual operations information pertaining to the proposed production schedule to the end that all operations contributing to such schedule are properly advised as to their responsibilities and to properly distribute the production of the Parts and Accessories Groups to the end that proper provision may be made for all demands and the most effective results thereby obtained.

12. Cafeteria & Clubhouse Section. To supervise the operation of all cafeteria and clubhouses provided by the Corporation for the use of the individual operation to the end that the most economical management may be provided with the most effective results.

13. Organization Section. To make a study of and at all times to be thoroughly familiar with the Corporation's various organizations; have complete records on hand pertaining thereto including authority charts; to advise when called upon of any operation of the best form of organization for getting certain desired results and to do such other development work, referring to form of organization as may be desired.

14. Tax Section. To study the question of municipal taxes and assessments and all other taxes, either than Federal Taxes which are a part of the General Financial and Accounting Section. To advise with the operations when called upon as to methods of procedure to properly protect the Corporation against excess charges or unjust treatment.

15. Personnel Section. To advise with the Operations Staff as well as the Advisory Staff pertaining to executive and clerical supply of personnel. To investigate and supply a record of applicants desiring connections with the Corporation and to keep in touch with applicants that will tend to strengthen the various staffs of the Corporation in a personnel way.

16. Personal Section. To handle all questions pertaining to welfare work, have jurisdiction over the medical and sanitary service of the various operations in any advisory way and to advise with the various operations as to all matters of such character.

17. Sales & Advertising Section. To study in a general way all matters pertaining to sales policy, advertising, etc. To develop statistics that will guide the Operations Staff in their sales and advertising work on such matters as would be beyond the scope or the capacity of an individual operation. To advise the sales department of the Operations Staff as to proper advertising medium, best style of copy and do all other matters of similar character.

President's Personal Staff

In view of the large number of matters that must necessarily come directly under the supervision of the President of the Corporation, through the interchange of matters from the different staffs, it becomes absolutely essential that an organization be provided to relieve the President of detail matters so far as it is possible to do so. The President's personal staff is divided into two general divisions:—

1. Personal Assistants to the President
2. Appropriations Committee

The functions of these divisions will be described separately.

Personal Assistants to the President—One or more assistants will be designated by the President for such duties as the President may elect to attach to such appointment.

Appropriations Committee—This Committee is to investigate, on behalf of the President, as to the propriety of extensions to the Corporation's units represented by betterments to existing properties or additions through the acquisition of new properties as may be recommended by the executive in charge of any operating division or group of operations or by the Vice President in charge of the General Advisory Staff. The Appropriations Committee has the privilege of drawing on the General Advisory Staff for such technical information and assistance as in its judgment may be desirable, with a view to obtaining the benefit of all the resources and expert information within the Corporation organization as a whole, in order that the President may best determine the proper method of procedure in each individual case.

Organization Chart

In order to better illustrate the proper functioning and relative position of the various staffs and the sub-divisions of the staff, the above study has been developed in diagrammatic form and is shown on the chart indicated as "Exhibit A" which is a part of this report.

Advantages

Having outlined in a general way the functioning of the various staffs on the executive side and the relation of

those staffs with the "Major Control", the benefits to be obtained by the proposed organization may be enumerated as follows:—

1. The broad policies of the Corporation are formulated by two principal Committees; that is, the Financial and Executive Committees. These Committees constitute experts in their individual line—the Executive Committee in the detailed management of the Corporation's operations—the Finance Committee along lines of finance and accounting.

2. The direct operation of the Corporation is centered in a single individual—the President of the Corporation. This must result in prompt and effective action on all important questions.

3. The direct operation of each individual unit is in the direct control of the executive in charge of that unit. This executive is responsible for the successful conduct of his specific operation in all its activities, resulting in the full exercise of that executive's initiative and ability together with that of his organization.

4. Operations of an allied nature are grouped together without lessening in any sense the initiative of the executive in charge of the individual operation. Through this plan the number of executives reporting to the President is very properly reduced.

5. Proper co-ordination between the Executive Staff, General Advisory Staff and General Finance and Accounting Staff is provided by Advisory Committees in which all these various staffs are represented. This must necessarily result in the develop-

ment of each staff along lines that will be profitable to the other staffs with a constant inter-change of viewpoints between the staffs to the end that illogical development incurring unnecessary expense with corresponding ineffectiveness will be eliminated. This should result in the development of cooperation throughout the Corporation as a whole increasing the morale and effectiveness.

Additional Recommendations

Considerable study has been given to the advisability of placing among the other functions of the General Advisory Staff all operations grouped together as Parts Groups. These operations present no commercial problems and are essentially manufacturing units, pure and simple. Their production is entirely absorbed within the divisions of the Corporation. The advantage of such an organization is that the chief executives constituting the Operations Staff using material from such Parts Divisions, would function so far as their requirements go, through the chief of the Advisory Staff. It is believed this would enable a more logical and satisfactory distribution of the products of such divisions. In other words, it is recommended as better organization to have the necessary decisions effecting the distribution of these parts determined by an independent authority subject in all cases to the control of the President rather than to have a chief executive of each operating division requiring such parts determine the distribution among themselves. This is believed to be particularly desirable in cases where the demand for such parts is in excess of the supply resulting in a certain amount of confusion which by the above plan it is believed could be avoided.

Note:

Page	6560	is	on	card	147.
"	6561	"	"	"	138.
"	6562	"	"	"	148.
"	6563	"	"	"	147.
"	6564	"	"	"	147.
"	6565	"	"	"	148.

Defendant's Exhibit (GM) No. 7

65566

GENERAL MOTORS CORPORATION

M. Donaldson Brown

A. P. Sloan, Jr.

Subject: General Motors Organization—
Responsibility of Governing Committees

Date: December 28,

As you have an opportunity to think over things, I would appreciate it if you would give some thought to the point that has recently come up with respect to the relationship of the Administration Committee to the Policy Committee to the Board of Directors. I think it is quite important.

While you say, very properly, that Lammot and Walter have never been very enthusiastic about our present set-up, I think their objection centers around the problem that I am now laying before you. Walter feels that the Policy Committee is asked to pass on too many details of administering the business, concerning which they cannot possibly be familiar. I don't know exactly what Lammot's objection is. But I think that we ought to give some thought to the problem with the hope that we might present some modification at the Organization Meeting next May, providing we can work out something that would not limit the present scheme of things, with which I am very enthusiastic, and at the same time meet the viewpoint of the others. That ought to be done, if it can be done.

As I said the other day when we were discussing the matter, it was my original concept that the Administration Committee would run the business. Everything pertaining to what we might call 'running the business' would be up to that Committee. And solely that Committee. Nothing would have to go beyond that Committee except matters of very broad policy. Of course, it is difficult to decide what is broad policy and what is not—it is a matter of

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interpretation—but I still think that we put too many things to the Policy Committee that involve administration and do not confine their work sufficiently to broad questions of policy. When I speak of broad questions of policy I don't necessarily mean financial policies. If the concept of the old Finance Committee was to deal with the problem as to whether the money was available or not—and I think it was to a large extent—then I don't think in our set-up the responsibility goes far enough. I think the top Committee should deal with broad questions of policy, financial and otherwise, but should not deal with the administration of policy. It is in that area that I think we should give some thought.

I might illustrate by referring to the coming question of whether we should operate in Germany or not. I don't think it is a question for the Policy Committee to decide as to how the operation shall be set up—that involves the running of the business. I do think, however, it is up to the Policy Committee to decide whether in its judgment it is desirable for General Motors to conduct a manufacturing operation in Germany.

Take another case: At the meeting the other day the question arose of compensating certain executives of GMC Truct & Coach Division. Considerable time was spent in discussing the details of the compensation scheme—whether there should be a ceiling or not. I don't think that's the business of the Policy Committee per se according to the organization set-up. It might well be within the scope of the Policy Committee to say that an operating executive

can or cannot be paid on a basis of direct performance measured in terms of sales, or something else, as against being on a direct salary basis. Frankly, I rather question that. I think that also is solely within the jurisdiction of the Administration Committee because it is a matter of

'running the business'. Of course, if it involves a conflict with the bonus system, that is a different thing.

What I am trying to say is:—that we start with the Policy Group on some question of policy. We spend hours discussing it. It then goes to the Administration Committee. Then it goes to the Policy Committee and sometimes it goes to the Board of Directors. All matters dealing with the operating phase of the business I think should stop with the Administrative Committee.

I am not making these remarks to get the idea across that I don't think the Policy Committee should be kept away from what is going on in the business. I don't care what they are told. I am glad to tell them everything and anything and to have everybody else tell them anything and everything that they are willing to take the time to listen to—that is not the point. I'm talking about the Administration set-up and I do think if we can confine the Policy Committee to matters of policy and keep them out of the business area, that we would save a lot of time; we would avoid confusion and uncertainty in the minds of the members of the Policy Committee and everybody could do a better job; and, importantly, I think the Wilmington people will be better satisfied with the set-up if they were not asked to pass on questions of administration concerning which they know nothing.

I might take another illustration in the small car: That, in a way, is 'running the business': There is a very great hazard here and I think when the Administration Committee has decided the question that we will have a small car, the problem should be put to the Policy Committee and perhaps the Board of Directors simply because of the peculiar circumstances involved.

I mention this to emphasize the difficulty in determining what is policy and what is 'running the business'. You can't make a definite rule and say one thing belongs to it

and other things are outside of it. We have got to use a considerable amount of judgment and the only point I am trying to make is:—that in exercising that judgment today we have reached the point where practically everything of any importance involving 'running the business' goes to the Policy Committee.

ALFRED P. SLOAN, JR. /s/

APSJr./K
cc Mr. C. E. Wilson

Note:

Pages 6570 - 6571 are pn card 149.

Defendant's Exhibit (GM) No. 10

GENERAL MOTORS CORPORATION 6572

BOARD OF DIRECTORS

May 10, 1923

*Management	*du Pont	
Day	P. S. du Pont	Bishop
Mott	Haskell	Kaufman
McLaughlin	Raskob	McGowan
Sloan	H. F. du Pont	McMaster
Bassett	I. du Pont	Baker
Smith	L. du Pont	Prosser
Brown		Stettinius
Kettering		Woodin
Swayne		Woolley
Hannum		Young
Hardy		
Rice		
Pratt		
Page		
Mooney		
F. J. Fisher		

"Management" includes retired executive personnel.

"Du Pont" indicates directors nominated by E. I. du Pont de Nemours and Company.

GENERAL MOTORS CORPORATION

BOARD OF DIRECTORS

December 31, 1942

Management	*du Pont*	*Others*
Mott	P. S. du Pont	Bishop
McLaughlin	Raskob	McGowan
Sloan	H. F. du Pont	*Whitney
Smith	L. du Pont	
Brown	*Carpenter	
Kettering	*H. B. du Pont	
Pratt		
*L. P. Fisher		
*Bradley		
*Grant		
*Hunt		
*Schumann		
*Wilson		
*Coyle		
*Curtice		
*Donner		
*E. F. Fisher		

"Management" includes retired executive personnel.

"Du Pont" indicates directors nominated by E. I. du Pont de Nemours and Company.

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GENERAL MOTORS CORPORATION

BOARD OF DIRECTORS

June 6, 1949

Management	*du Pont*	*Others*
Mott	*Brown	Whitney
McLaughlin	Carpenter	*Douglas
Sloan	H. B. du Pont	*Mellon
Kettering	*Echols	
Pratt	*Copeland	
L. P. Fisher		
Bradley		
Grant		
Hunt		
Schumann		
Wilson		
Coyle		
Curtice		
Donner		
E. F. Fisher		
*Archer		
*Johnson		
*Evans		
*Goad		
*Kunkle		
*Burke		
*Godfrey		

"Management" includes retired executive personnel.

"Du Pont" indicates directors nominated by E. I. du Pont de Nemours and Company.

GENERAL MOTORS CORPORATION

BOARD OF DIRECTORS

February 1, 1953

Management	*du Pont*	*Others*
Mott	Brown	Whitney
McLaughlin	Carpenter	Douglas
Sloan	H. B. du Pont	Mellon
Kettering	Echols	*Alexander
Pratt	Copeland	*Clay
L. P. Fisher		*Compton
Bradley		
Grant		
Hunt		
Schumann		
Curtice		
Donner		
E. F. Fisher		
Johnson		
Evans		
Goad		
Kunkle		
Godfrey		
*Gordon		
*Kindl		
*Klingler		
*Osborn		
*Skinner		

"Management" includes retired executive personnel.

"Du Pont" indicates directors nominated by E. I. du Pont de Nemours and Company.

Defendant's Exhibit (GM) No. 11

6576

Copy to: Mr. Lammot du Pont
Building

Mr. Donaldson Brown
General Motors Corporation
1775 Broadway
New York, N. Y.

April 8, 1943.

Mr. Alfred P. Sloan, Jr.
General Motors Corporation
1775 Broadway
New York, N. Y.

Dear Alfred:

You will recall my previous letter on the subject of the Board of Directors of General Motors.

In giving this matter some more thought I asked one or two of the men around here if they would not help me in getting up a list of people from which we might consider the selection of several names of men who might be willing to serve as members of General Motors and who might contribute to the work.

I am enclosing a copy of such a list. Probably some of the names will shock you and may be some of them will appeal to you. I certainly would not at this time say that I know enough about any of them to pass final judgment myself. I do think, however, that they may indicate a general class or type of men that I have had in mind.

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You will, no doubt, be surprised at the absence of certain names which might occur to you off-hand, but in getting together this list I have endeavored to get men either in their low fifties or preferably in their forties, though you will note some divergence from that qualification.

It seems to me that the events of recent months have indicated rather strongly the desirability of a larger representation outside of the management. There is much work for men today who are not members of the management, and on a number of questions the lawyers seem to advocate the disqualification of management members. Also, it seems to me inherently that the Board of Directors which represents the stockholders should be made up of at least a majority of members who are not a part of management. I am a little inclined to the feeling too that it might not be a bad idea to have representation from groups of different

political and economic philosophy and even from groups which we don't associate primarily with industry as such. For instance, from among the publishers.

I have gathered in discussing this with Lammot that perhaps both he and you are somewhat of the opinion that the selection of new members should await the retirement of old members for one reason or another. I personally feel quite differently about that. I think that the problem of the corporation is enormous and the responsibility correspondingly great. These will not grow less in magnitude, but perhaps greater; nor will they ever be solved but will be continuing burdens and responsibilities. I think, therefore, we cannot get new men in at too early a date in order

that they may become somewhat familiar with the problems and will be able to carry on when those who have borne the principal burdens to date are ready to withdraw.

However the purpose of this letter is merely to convey this list. You, no doubt, will have other names to add to it and I will be glad to discuss it with you sometime.

Sincerely yours,

WSC:R

P. S. It seems to me that in connection with this question of obtaining the services of valuable men as Directors of General Motors we should consider the question of adequate compensation for services rendered. It seems to me that the payment of a purely nominal fee for Directors is wholly unrealistic and must result on the average in getting nominal services. It is my understanding that, both in England and on the Continent, the practice is quite different from this. If we are to expect the time and interest of some of the best men in the country we should expect to pay fully for it.

W. S. C., Jr.

NOTE: "File Copy" is printed across both pages of the letter and "33." is written at the top of the first page. The check marks on the attached list are by hand. "gmc-424" is written lower right corner of each page of the letter; "gmc-425" at lower right corner of each page of attached list.

6579

Boston	Age	Other Connections
✓T. Jefferson Coolidge	49-50	Former Under Secretary of the Treasury; Chairman, Old Colony Trust Co. " United Fruit Co. Dir., Boston Edison Company " New England Mutual Life Insurance Company " New York Central R. R.
Bridgeport		
✓C. K. Davis, Pres. & General Mgr., Remington Arms Company	54	
Chester		
Thomas B. McCabe, Pres. & Dir. Scott Paper Company	50	Dir., Brunswick Pulp & Paper Co., Chairman & Dir., Federal Reserve Bank of Phila., Dir., Nova Scotia Wood Pulp & Paper Co., Ltd.
Chicago		
James S. Kemper, Pres. Lumbermen's Mutual Life Insurance Company	56	Pres., National Retailers Mutual Ins. Co. " Amer. Motorists Ins. " Federal Mutual Fire Ins. Company Dir., Ohio Underwriters Mutual Ins. Company " City National Bank & Trust Company " Lumber Mutual Fire Insurance Company Former Pres., Chamber of Commerce of the United States
Kansas City		
James M. Kemper, President and Chairman, Commerce Trust Company	48	Dir., Plaza Bank of Commerce " Kansas City Gas Company " Maryland Casualty Company " General American Life Insurance Company " Missouri Pacific Ry. " Fox Midwest Theatres

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Minneapolis	Age	Other Connections
J. Cameron Thomson, Pres. Northwest Bancorporation.	52	Director, Northwestern National Bank and Trust Co.
New York		
✓ Winthrop Wm. Aldrich, Chrm. Chase National Bank of N. Y.	58	Pres. & Dir., Chase Safe Deposit Company Dir., American Telephone & Telegraph Company Dir., Westinghouse Electric & Mfg. Company " Westinghouse International Company Trustee, New York Community Trust Dir., Discount Corporation of New York Member Ex. Com., Chamber of Commerce of New York State Trustee, Rockefeller Foundation Dir., Metropolitan Life Insurance Company
✓ Henry Clay Alexander, Vice President J. P. Morgan & Co., Inc.	41	Dir., Johns Manville Corp. N.Y. " American Viscose Corporation.
✓ Arthur A. Ballantine 31 Nassau Street	59	Lawyer, Parther, Root, Clark, Buckner and Ballantine Former Under-Secretary of the Treasury, Trustee, Carnegie Endowment International Peace, Memorial Hospital, Teachers College, etc.
✓ Lewis H. Brown, President Johns-Manville Corp. 22 East 40th Street, N Y.	49	Director, American Telephone & Telegraph Company " Bankers Trust Company; " New York World's Fair 1939-40; Trustee, Mutual Life Ins. Co.; Chairman Bd. Trustees, Tax Foundation.

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✓ W. Gibson Carey, Jr., Pres. Yale & Towne Mfg. Company Chrysler Building	47	Director, Irving Trust Company " Colgate, Palmolive Peet Company, Trustee, Mutual Life Ins. Co. Former President, Chamber of Commerce of the United States V. Chm. National Industrial Conference Board Member Bd. of Dir., Commerce & Industry Assn. New York Trustee, Consolidated Edison, N.Y.

New York	Age	Other connections
Harry P. Davison, Dir. J. P. Morgan & Co., Inc. New York, N. Y.		On active service in the armed forces.
✓ Lewis W. Douglas, President Mutual Life Insurance Company of New York 31 Nassau Street	49	Former Member of Congress from Arizona Former Director of the Budget Former V. P., American Cyanamid Company Former President, Magill University
✓ Frederick W. Ecker	46-47	Formerly Executive Vice President Metropolitan Life Insurance Company Now with Lease-Lend Administration in Washington
✓ Leon Fraser, President First National Bank of New York 2 Wall Street, N. Y.	53	Lawyer by profession Former President, Bank for International Settlements, Director, Federal Reserve Bank of New York Director, General Electric Co. " U. S. Steel Corp. Trustee, Mutual Life Ins. Co. " Columbia University
✓ Artemus L. Gates	48	Trustee, New York Trust Co. Member Finance Com. & Dir., American Smelting & Refining Company Director, North British & Mercantile Insurance Company

		Director, Mercantile Insurance Company Director, American Surety Co. " Greenwich Savings Bk. " Pan American Airways, Inc. " Time, Inc. " Safe Deposit Company of the New York Trust Company " Commonwealth Insurance Company
Walter S. Gifford, Pres. American Telephone & Telegraph Company 195 Broadway	58	Director, First National Bank of New York, Former Director, U. S. Steel Corp.

✓ New York	Age	Other connections
Wm. S. Gray, Jr., President and Trustee, Central Hanover Bank & Trust Company	46	Director, American Eagle Fire Insurance Company " American & Foreign Insurance Company " British & Foreign Marine Insurance Co., Ltd. " Discount Corp. of N. Y. " Eagle Indemnity Company " Federal Union Ins. Co. " Fidelity-Phenix Fire Insurance Company " Flintkote Company " General Foods Corp. " Globe Indemnity Company Pres. & Dir., Wm. S. Gray & Co. Trustee, Juilliard Musical Foundation Director, Hudson Insurance Company " Liverpool & London & Globe Insurance Co., Ltd. " National Surety Corp. " National Surety Marine Corporation " Newark Fire Ins. Co. " North British & Mercantile Insurance Company

		Member of Ex. Committee & Director, Northern Insurance Company
		Director, One Hundred Fifty William Street Corporation
		Member of Ex. Committee & Director, Prudential Insurance Company of Great Britain
		Director, Queen Insurance Co. of America
		" Royal Indemnity Company
		" Royal Insurance Co., Ltd.
		" Star Insurance Company
		Member of Ex. Committee & Director, Texas Company
		Member of Ex. Committee & Director, Texas Corporation
		Director, Thames & Mersey Marine Insurance Company, Ltd.
		" Union Carbide & Carbon Corporation

New York	Age	Other connections
✓ John W. Hanes, Chairman Finance Committee United States Lines Co. 1 Broadway	51	Former Under-Secretary of the Treasury, and brokerage firms. Director, Bankers Trust Company " Johns-Manville Company " American Newspapers " Hearst Corporation " Glenn L. Martin Company
✓ George L. Harrison, Pres. New York Life Insurance Company 51 Madison Avenue	56	Lawyer by training. Former President, Federal Reserve Bank of New York, and General Counsel, Federal Reserve Board
✓ Irving S. Olds, Chairman United States Steel Corp. 71 Broadway	56	Lawyer by profession. Former Partner, White & Case.
Thomas I Parkinson, Pres. Equitable Life Assurance Society 393 Seventh Avenue	61	Lawyer by profession. Director, Atlantic Mutual Ins. Company " Borden Company " Consolidation Coal Co. " Chase National Bank " Continental Insurance Company

		" Westinghouse Electric & Mfg. Company Trustee, Emigrant Industrial Savings Bank Rockefeller Foundation Columbia University University of Pa. Former Pres., N.Y. State C. of Com.
Arthur H. Sulzberger, Pres. New York Times Company	51	Director, Spruce Falls Power & Paper Company, Toronto " Times Telephoto Equipment, Inc. Trustee, Rockefeller Foundation Director, Welfare Council of N.Y. Incorporator, American National Red Cross
✓ Pittsburgh		
R. K. Mellon, President Mellon National Bank	44	Director, Union Trust. Co. of Pittsburgh " Pullman, Inc. " Pa. Railroad Company " Westinghouse Airbrake Koppers Company " Gulf Oil Corp. " Pittsburgh Plate Glass Aluminum Co. of Amer. Carborundum Company

Pittsburgh	Age	Other connections
✓ Clarence Stanley, Pres. Union Trust Company of Pittsburgh	46	Director, General Electric Company " Union Title Gty. Company " Union Savings Bank " Fed. Res. Bank of Cleveland (Pitts. Branch) " National Union Fire Ins. " Superior Steel Corp.
Washington		
John C. Gall Investment Building	42	Former Counsel, National Association of Manufacturers.

Wilmington

✓ Lammot du Pont Copeland	38	Director, Wilmington Trust Company " E. I. du Pont de Nemours & Company " Union National Bank of Wilmington " U. S. Rubber Company
Angus B. Echols, Vice Pres. and Dir., E. I. du Pont de Nemours & Company	53	
✓ R. W. Woodruff, Chairman Coca-Cola Company	53	Former Pres., White Motor Company Director, National Foreign Trade Council

✓Winston-Salem

Robert M. Hanes, Pres. Wachovia Bank & Trust Co.	52	Director, Southern Railway Company " P. H. Hanes Knitting Co. " Hanes Dye & Finishing Co. " Security Life & Trust Co. " Atlantic Joint Stock Land Bank " Maryland Casualty Company Former President, American Bankers Association
S. Clay Williams, Chairman R. J. Reynolds Tobacco Co.	58	Lawyer by profession. Director, American Telephone & Telegraph Company " Chamber of Commerce of the U. S. Formerly Chairman National Industrial Recovery Board.

Defendant's Exhibit (GM) No. 12

6586

Copy to: Mr. Lammot du Pont
Building
Mr. Donaldson Brown
General Motors Corp.
New York, N. Y.

September 22, 1943.

Mr. Alfred P. Sloan, Jr.
General Motors Corporation
1775 Broadway
New York, N. Y.

Dear Alfred:

In my letter of April 8th to you I enclosed a list of names of men that might be given some thought in connection with General Motors Directorship. I am attaching a list hereto containing the names of some of the men that were on that list and also several new names.

I might say that I have not given full consideration to these names and might even be opposed to the selection of these individuals, but I am merely tossing them into your pool so that they may be given some consideration in connection with the other names which you may have.

You will notice that I have endeavored to stick to an age around fifty, and there are no doubt many men of greater age than would be desirable except for the fact that I am very hopeful that in this move we will look well into the future.

I thoroughly agree with our discussion of a day or two ago that the sine qua non of the selection must be that in some way or other these men would be sincerely and persistently interested in the welfare of General Motors.

Sincerely yours,

WSC:R

	Age
T. Jefferson Coolidge, Chairman, Old Colony Trust Company	49-50
C. K. Davis, Pres. & General Mgr. Remington Arms Company	54
Winthrop Wm. Aldrich, Chairman Chase National Bank of N. Y.	58
Henry Clay Alexander, Vice President J. P. Morgan & Co., Inc.	41
Arthur A. Ballantine — (Lawyer - Partner) Root, Clark, Buckner & Ballantine	59
Lewis H. Brown, President Johns-Manville Corp. 22 East 40th Street, N. Y.	49
W. Gibson Carey, Jr., President Yale & Towne Mfg. Company Chrysler Building, N. Y.	47
Lewis W. Douglas, President Mutual Life Insurance Co. of N. Y. 31 Nassau Street	49
Frederick W. Ecker Formerly Ex. Vice President Metropolitan Life Insurance Co. (Now Lease-Lend)	46-47
Leon Fraser, President First National Bank of New York 2 Wall Street	53
Artemus L. Gates Trustee, New York Trust Co. Member Finance Com. & Dir. American Smelting & Refining Company	48

	Age
Wm. S. Gray, Jr. President & Trustee Central Hanover Bank & Trust Company	46
John W. Hanes, Chairman Finance Com. United States Lines Company 1 Broadway	51

—2—

George L. Harrison, Pres. New York Life Insurance Company 51 Madison Avenue, N. Y.	56
Irving S. Olds, Chairman United States Steel Corp. 71 Broadway, N. Y.	56
R. K. Mellon, President Mellon National Bank Pittsburgh, Pa.	44
Clarence Stanley, Pres. Union Trust Company of Pittsburgh	46
Lammot du Pont Copeland Dir. E. I. du Pont de Nemours & Company Wilmington, Del.	38
R. W. Woodruff, Chairman Coca-Cola Company Wilmington, Del.	53
Robert M. Hanes, Pres. Wachovia Bank & Trust Co.	52
S. Sloan Colt, President & Dir. Bankers Trust Company, N. Y.	51

NOTE: "File Copy" is printed across each page; "gmc 819" is handwritten in lower right of first page and "gmc-819a" is handwri[illegible]n in lower right of both pages of list of names.

Defendant's Exhibit (GM) No. 13

6589

GENERAL MOTORS CORPORATION
BROADWAY AT 57TH STREET.
NEW YORK 19, N. Y.

August 15, 1944
(Dictated) August 11, 1944

Mr. Walter S. Carpenter, Jr.
President
E. I. duPont deNemours & Company
Wilmington, Delaware

RE: GENERAL MOTORS ORGANIZATION—
BOARD OF DIRECTORS—MEMBERSHIP

My dear Walter:

You perhaps will think I have forgotten all about the desire of everybody, including yourself who was really the promoter of the movement, that we expand our Board by taking on additional members.

You recall that I suggested the names of three candidates and it was agreed that I would invite these men to join the Board. They were:—Dr. Karl T. Compton, President, M.I.T.; Lewis W. Douglas, President, Mutual Life Insurance Company of New York, and Calvin P. Bentley of Michigan. I have seen the first two but have not been able as yet to contact with the third but expect to do so shortly. It has taken considerable time to get the answer, but anyway here it is:—

Mr. Douglas has accepted and I am sure we will all be gratified that he has been willing to serve with us. Beside that, he seems very much pleased at the invitation. He told me that he knew it would be very interesting on account of the size and magnitude of our operations. Do to the fact that he is not very well at the moment and faces an opera-

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tion within the next thirty days or so, he asked to have the matter delayed so far as his election is concerned until the end of October, which would mean the November meeting. I will arrange to have this done.

Dr. Compton has given the matter a great deal of consideration. I think he would like to join the Board, but after discussing it over quite a period of time with his people at M.I.T. he has come to the conclusion that he ought not to do it due to his relationship with M.I.T. I explained to him that I did not see that one in any sense interfered with the otherthat it was natural that he should be on our Board as two or more of our Board members are graduates of the Institute. However, he has decided not to accept the invitation.

I am inclined to think that the reason is partly what has been stated and more particularly the fact that he has received other invitations; one he mentioned to me from the General Electric Company, and he turned them down for the same reason and I think he felt that he could not consistently accept any such invitation, under existing circumstances.

He discussed with me certain changes in organization that he was going to recommend in due course for M.I.T. which might sufficiently change his relationships in order that the existing restrictions might not apply. That means, of course, it is a matter of the future.

So, we have not made very much progress but I think the progress that we have made is constructive and on the basis of quality even if it does not involve quantity.

Very truly yours,

/s/ ALFRED P. SLOAN, JR.
Chairman

APSJr./K

Defendant's Exhibit (GM) No. 14

6591

November 20, 1947.

CONFIDENTIAL

Mr. Alfred P. Sloan, Jr., Chairman
General Motors Corporation
New York, N. Y.

Dear Alfred:

Regarding our chat the other day, I am noting below three names. I am not urging strongly that any one of them be presented, but rather am I sending them along to add to your galaxy for consideration. —

The first one is Mr. Robert Woodruff. He is the head of the Coca-Cola Company. I presume that he is a man about my age. He certainly made an outstanding success of his business. He has a particular flare for questions of advertising and distribution and is no mean operator when it comes to general questions of national politics. I do not suggest this latter as being of any great service to us in political matters, but it is not without some merit to have advice on such matters in connection with questions of general national interest.

They had their office here in Wilmington for a number of years, at which time he used to be here off and on and we saw something of him. Their main location is Atlanta, Georgia, though I believe that his office is nowadays actually in New York.

We have talked about the merit of having someone from an area outside of New York and yet we have wondered

4389

whether such a person would be available for meetings. We might find in Woodruff a man who has the virtues of official and actual connections outside of New York and yet available in New York.

Woodruff is not wholly unacquainted with the automobile world as he was at one time President of the White Motor Company.

Another name that we might consider is that of John Hanes. He is a member of that important group down in the Carolinas. There are several brothers, I believe. One of them is Robert Hanes who is the banker.

—2—

I do not know how much, if any, background of industrial experience that John Hanes has had, but he has, as you know, been a man of considerable prominence of recent years. He was Assistant Secretary of the Treasury of the United States at one time and has, of recent years, been very active in the Tax Foundation. I presume that we do not need on the Board so much experience with actual operating matters and perhaps a man with a broad interest and knowledge of affairs might be of even more help.

Another name which occurs to me is that of Brehon B. Somervell.

You may recall that he was General Somervell during the war and at that time was in charge of army supplies and services and had under him the enormous activities of supplies and services for the army. It is my general impression that he did an extraordinarily good job in that connection. He is now, I believe, President of the Koppers

Company. A possible objection to his selection at this time might be the criticism which might be stirred up in connection with his association with as important a contractor for war supplies as General Motors was. I do not know how much active, intimate contact he ever had with the army purchases of materials from General Motors but it probably is true that an enormous volume of those purchases did come under his supervision.

As I said above, and wish to emphasize, I am merely tossing these names into the hat, thinking that you might wish to have them analyzed in connection with other names you may wish to consider.

Yours sincerely,

WSC/jvt

NOTE. "File Copy" stamped across each page of letter. An illegible set of initials appears at bottom of first page.

Defendant's Exhibit (GM) No. 15

SCHEDULE OF MEETINGS OF THE BOARD OF DIRECTORS OF THE DU PONT COMPANY
MAY, 1923 TO DECEMBER 20, 1948

6594

(Mr. A. P. Sloan's attendance is indicated by an asterisk (*))

TYPE	DATE
Regular	May 21, 1923
Regular	June 18, 1923 *
Regular	July 16, 1923
Regular	August 20, 1923
Special	August 30, 1923
Regular	September 17, 1923 *
Regular	October 15, 1923
Regular	November 19, 1923
Regular	December 17, 1923
Regular	January 21, 1924
Regular	February 18, 1924
Regular	March 17, 1924 *
Regular	April 21, 1924
Regular	May 19, 1924
Regular	June 16, 1924
Regular	July 21, 1924
Regular	August 18, 1924
Regular	September 15, 1924
Regular	October 20, 1924
Regular	November 17, 1924
Regular	December 15, 1924 *
Regular	January 19, 1925
Regular	February 16, 1925
Regular	March 16, 1925
Regular	April 20, 1925
Regular	May 18, 1925
Regular	June 22, 1925 *
Regular	July 20, 1925
Regular	August 17, 1925
Regular	September 21, 1925
Regular	October 19, 1925
Regular	November 16, 1925
Regular	December 21, 1925
Regular	January 18, 1926
Regular	February 15, 1926
Regular	March 15, 1926
Regular	April 19, 1926
Regular	May 17, 1926
Regular	June 21, 1926 *

TYPE	DATE
Regular	July 19, 1926
Regular	August 16, 1926
Regular	September 20, 1926
Regular	October 18, 1926
Regular	November 15, 1926
Regular	December 20, 1926
Regular	January 17, 1927
Regular	February 14, 1927
Regular	March 21, 1927
Regular	April 18, 1927
Regular	May 16, 1927
Regular	June 20, 1927
Regular	July 18, 1927
Regular	August 15, 1927
Regular	September 19, 1927 *
Regular	October 17, 1927
Regular	November 21, 1927
Regular	December 19, 1927
Regular	January 16, 1928
Regular	February 20, 1928
Regular	March 19, 1928
Regular	April 16, 1928
Regular	May 21, 1928
Regular	June 18, 1928
Regular	July 16, 1928
Regular	August 20, 1928
Regular	September 17, 1928
Regular	October 15, 1928
Regular	November 19, 1928
Regular	December 17, 1928
Regular	January 21, 1929
Regular	February 18, 1929
Regular	March 18, 1929
Regular	April 15, 1929
Regular	May 20, 1929
Regular	June 17, 1929
Regular	July 15, 1929
Regular	August 19, 1929
Regular	September 16, 1929 *
Regular	October 21, 1929
Regular	November 18, 1929
Regular	December 16, 1929
Regular	January 20, 1930
Regular	February 17, 1930
Regular	March 17, 1930
Regular	April 21, 1930
Regular	May 19, 1930
Regular	June 16, 1930

TYPE	DATE
Regular	July 21, 1930
Regular	August 18, 1930
Regular	September 15, 1930
Regular	October 20, 1930
Regular	November 17, 1930
Regular	December 15, 1930
Regular	January 19, 1931
Regular	February 16, 1931
Regular	March 16, 1931
Regular	April 20, 1931
Regular	May 18, 1931
Regular	June 15, 1931 *
Regular	July 20, 1931
Regular	August 17, 1931
Regular	September 21, 1931
Regular	October 19, 1931
Regular	November 16, 1931
Regular	December 21, 1931
Regular	January 18, 1932
Regular	February 15, 1932 *
Regular	March 21, 1932
Regular	April 18, 1932
Regular	May 16, 1932
Regular	June 20, 1932
Regular	July 18, 1932
Regular	August 15, 1932
Regular	September 19, 1932
Regular	October 17, 1932
Regular	November 21, 1932
Regular	December 19, 1932
Regular	January 16, 1933
Regular	February 20, 1933
Regular	March 20, 1933 *
Regular	April 17, 1933
Regular	May 15, 1933
Regular	June 19, 1933
Regular	July 17, 1933
Regular	August 21, 1933
Regular	September 18, 1933 *
Regular	October 16, 1933
Regular	November 20, 1933
Regular	December 18, 1933
Regular	January 15, 1934 *
Regular	February 19, 1934
Regular	March 19, 1934
Regular	April 16, 1934 *
Regular	May 21, 1934
Regular	June 18, 1934

TYPE	DATE
Regular	July 16, 1934
Regular	August 20, 1934
Regular	September 17, 1934
Regular	October 15, 1934
Regular	November 19, 1934
Regular	December 17, 1934
Regular	January 21, 1935
Regular	February 18, 1935
Regular	March 18, 1935 *
Regular	April 15, 1935
Regular	May 20, 1935
Regular	June 17, 1935
Regular	July 15, 1935
Regular	August 19, 1935
Regular	September 16, 1935
Regular	October 21, 1935
Regular	November 18, 1935
Regular	December 16, 1935
Regular	January 20, 1936
Regular	February 17, 1936
Regular	March 16, 1936
Regular	April 20, 1936
Regular	May 18, 1936
Regular	June 15, 1936
Regular	July 20, 1936
Regular	August 17, 1936
Regular	September 21, 1936
Regular	October 19, 1936
Regular	November 16, 1936
Regular	December 21, 1936
Regular	January 18, 1937
Regular	February 15, 1937
Regular	March 15, 1937
Regular	April 19, 1937
Regular	May 17, 1937
Regular (postponed until June 28)	June 21, 1937
Special	June 28, 1937
Regular	June 28, 1937
Regular	July 19, 1937
Regular	August 16, 1937
Special	September 8, 1937
Regular	September 20, 1937
Regular	October 18, 1937
Regular	November 15, 1937
Regular	December 20, 1937

TYPE	DATE
Regular	January 17, 1938 *
Regular	February 21, 1938
Regular	March 21, 1938
Regular	April 18, 1938
Regular	May 16, 1938
Regular	June 20, 1938
Regular	July 18, 1938
Regular	August 15, 1938
Regular	September 19, 1938
Regular	October 17, 1938
Regular	November 21, 1938 *
Regular	December 19, 1938
Regular	January 16, 1939
Regular	February 20, 1939
Regular	March 20, 1939
Regular	April 17, 1939
Regular	May 15, 1939
Regular	June 19, 1939
Special	June 26, 1939
Regular	July 17, 1939
Regular	August 21, 1939
Regular	September 18, 1939
Special	October 9, 1939
Regular	October 16, 1939
Regular	November 20, 1939
Regular	December 18, 1939
Regular	January 15, 1940
Regular	February 19, 1940
Regular	March 18, 1940
Regular	April 15, 1940 *
Regular	May 20, 1940
Regular	June 17, 1940
Regular	July 15, 1940
Regular	August 19, 1940
Regular	September 16, 1940
Regular	October 21, 1940
Regular	November 18, 1940
Regular	December 16, 1940
Regular	January 20, 1941
Regular	February 17, 1941 *
Regular	March 17, 1941
Regular	April 21, 1941
Regular	May 19, 1941
Regular	June 16, 1941
Regular	July 21, 1941
Regular	August 18, 1941
Regular	September 17, 1941
Regular	October 20, 1941
Regular	November 17, 1941 *
Regular	December 15, 1941

6599

TYPE	DATE
Regular	January 19, 1942
Regular	February 16, 1942
Regular	March 16, 1942
Regular	April 20, 1942 *
Regular	May 18, 1942
Regular	June 15, 1942
Regular	July 20, 1942
Regular	August 17, 1942
Regular	September 21, 1942
Regular	October 19, 1942
Regular	November 16, 1942 *
Regular	December 21, 1942 *
Regular	January 18, 1943
Regular	February 15, 1943
Regular	March 15, 1943
Regular	April 19, 1943
Regular	May 17, 1943 *
Regular	June 21, 1943
Regular	July 19, 1943
Regular	August 16, 1943
Regular	September 20, 1943 *
Regular	October 18, 1943 *
Regular	November 15, 1943
Regular	December 20, 1943
Regular	January 17, 1944
Regular	February 21, 1944 *
Regular	March 20, 1944
Regular	April 17, 1944 *
Regular	May 15, 1944
Regular	June 19, 1944 *
Regular	July 17, 1944
Regular	August 21, 1944
Regular	September 18, 1944 *
Regular	October 16, 1944
Regular	November 20, 1944
Regular	December 18, 1944 *
Regular	January 15, 1945
Regular	February 19, 1945
Regular	March 19, 1945
Regular	April 16, 1945 *
Regular	May 21, 1945
Regular	June 18, 1945
Regular	July 16, 1945
Regular	August 20, 1945
Regular	September 17, 1945 *
Regular	October 15, 1945
Regular	November 19, 1945 *
Regular	December 17, 1945

4397

TYPE	DATE
Regular	January 21, 1946
Regular	February 18, 1946
Regular	March 18, 1946
Regular	April 15, 1946 *
Regular	May 20, 1946
Regular	June 17, 1946 *
Regular	July 15, 1946 *
Regular	August 19, 1946
Regular	September 16, 1946 *
Regular	October 21, 1946
Regular	November 18, 1946 *
Regular	December 16, 1946 *
Regular	January 20, 1947
Regular	February 17, 1947
Regular	March 17, 1947
Regular	April 21, 1947 *
Special	April 29, 1947
Regular	May 19, 1947 *
Regular	JUne 16, 1947
Regular	July 21, 1947 *
Regular	August 18, 1947
Regular	September 15, 1947 *
Regular	October 20, 1947
Regular	November 17, 1947 *
Regular	December 15, 1947 *
Regular	January 19, 1948
Regular	February 16, 1948
Regular	March 15, 1948
Regular	April 19, 1948
Regular	May 17, 1948 *
Regular	June 21, 1948 *
Regular	July 19, 1948 *
Regular	August 16, 1948
Regular	September 20, 1948
Regular	October 18, 1948 *
Regular	November 15, 1948
Regular	December 20, 1948

Defendant's Exhibit (GM) No. 16

TABLE OF ATTENDANCE BY ALFRED P. SLOAN, JR.
AT DU PONT BOARD OF DIRECTORS MEETINGS,
1923-1948

Year	Number of Meetings Held	Number of Meetings Attended by Mr. Sloan
1923	9	2
1924	12	2
1925	12	1
1926	12	1
1927	12	1
1928	12	None
1929	12	1
1930	12	None
1931	12	1
1932	12	1
1933	12	2
1934	12	2
1935	12	1
1936	12	None
1937	15	None
1938	12	2
1939	14	None
1940	12	1
1941	12	2
1942	12	3
1943	12	3
1944	12	5
1945	12	3
1946	12	6
1947	13	6
1948	12	4

Defendant's Exhibit (GM) No. 17

6602

GENERAL MOTORS CORPORATION

BROADWAY AT 57TH STREET

NEW YORK N Y

Mr. Irenee duPont, President,
E. I. duPont deNemours & Company,
Wilmington, Delaware.

July 25, 1928.

My dear Irenee:-

I have just written Mr. P. S. duPont stating that the New York papers have handled the incident of yesterday, so far as I can see, on the whole satisfactorily altho there have been certain things stated which, of course, I regret, as will always be the case.

I appreciate fully that you differ with us on the question involved. I respect your opinion as I presume you do ours. I am sure we are both working to the interest of the Corporation. As a matter of fact, the Corporation's interest is the only interest I have, as of course you know. I must say not in defense of our own opinion but simply reflecting the facts in the case, that many editorials reflect our viewpoint. The most striking one and the one that appeals to me the most is the editorial in the Boston News Bureau, copy of which I attach for your information. Other editorials have also appeared voicing, in a way, the general sentiment altho not put so forcibly, as I see the picture.

I personally feel - perhaps I am right and perhaps I am wrong - that much injury has been done the Corporation. Naturally, much of it can be overcome, but I cannot help but feel that there will be a certain permanent loss of prestige for what has gone by. That, of course, can not be helped, but the only thing to do is for us to work that much harder to overcome it which, of course, we will try to do.

I feel very badly - not over the incident itself, but over many situations surrounding it. It has been most unfortunate and still more unfortunate I can not help but feeling that it could have been entirely avoided, at least to a large measure, if it had been handled differently.

Very truly yours,

Alfred P. Sloan Jr

APSJr./K

Enc.

NOTE: Illegible stamp appears in upper right.

4400

Defendant's Exhibit (GM) No. 18 6603

July 27, 1928

COPY TO: Mr. John J. Raskob,
General Motors Corp.,
New York City.

Mr. Alfred P. Sloan, Jr.
General Motors Corporation
224 W. 57th Street
New York City.

Dear Alfred:

This will acknowledge your letter of July 25.

You may rest assured that though my opinion was not that of a majority of the Board, as taken by your poll of them, I am still a believer in "majority rule" where the vote is by competent people. You doubtless know the effects of General Motors better than I, but I have a suspicion that a great deal of the trouble results from political "heat". This will all blow over after election when we should see a happy and reunited family.

It is of the utmost importance that the other resignation be not accepted, but on the contrary withdrawn. Not that anyone blames him for wishing to "let down", but the step is because of loyalty to a friend rather than necessity of the case. Perhaps no one could influence him more than John Raskob, himself, for he at least cannot be considered selfish by advocating a withdrawal of the communication.

Sincerely yours,

NOTE: FILE COPY is printed across page.

4401

Defendant's Exhibit (GM) No. 19

6604

Copy to Mr. John J. Raskob

Irvington-on-Hudson, N.Y:
August 15, 1928.

Mr. P. S. du Pont,
du Pont Building,
Wilmington, Del.

Dear Pierre:

I have wanted to write you and John for some time but the impediment in my speech makes it hard for me to be understood, and my handwriting, because of Rheumatism, has gone Democratic.

I think when you and John went in to help your country, the directors of the General Motors Corporation should have said, "For you gentlemen to take on additional patriotic work and responsibility, we have nothing but praise. Your salaries will be doubled until after election." I think some one should give you both medals for patriotism.

If more of our able, successful and unselfish men were to follow your example, we would have a much better Government. I think you did right and I congratulate you both.

Kind regards and best wishes.

Sincerely,

Coleman du Pont.

P. S. Since writing the above I have received your letter of August 13th and agree with you that it is just as hard to swallow some of the things the Democrats are doing as it is to swallow some of the things the Republicans are doing, but the Democrats are doing more of them.

4402

Getting prohibition into politics is going to make it harder to do anything for prohibition. Of course, I am sorry you got in on the wrong side of the fence, but glad you are in. Prohibition is not a partisan matter. I think prohibition modification is a most important matter but it is not a political matter. The prohibitionists were very careful not to make it a political issue.

Defendant's Exhibit (GM) No. 20

Do

6606

August 17th, 1928.

Honorable Coleman du Pont,
Irvington-on-Hudson,
New York.

Dear Coleman:

Many thanks for sending me copy of your letter of the fifteenth to Pierre.

I too think the General Motors position was thoroughly wrong and it is to be regretted. Pierre and I both contended that it ought to take the lead in asserting that it is not in politics, that it will in no way attempt to influence its employees, but that on the other hand if its employees will take an active interest in government, it will extend leave of absence to those employees during period of campaigns, in order to enable them to run for Councilman, State Senator, United States Senator or even President and hold their job open for them if they care to return after election. This position, however, was not adopted.

It is part of the duty of the President of the United States to enforce the law and it is also part of his duty "to recommend to the Congress such measures as he shall judge necessary and expedient". Many of us feel that there are few things more necessary or expedient to the future welfare and well-being of our country and its people than some modification of existing liquor laws that will restore temperate life. The Republican Administration have failed to do this and I think have deliberately, through the prohibition enforcement unit, kept the truth with respect to what is happening under our liquor laws, from the people.

The above are some reasons briefly stated, why I must

4404

disagree with you in your feeling that this is not a proper question to inject in politics.

No one who has been in Washington can successfully deny the fact that the Anti-Saloon League have exercised tremendous pressure and a controlling influence politically in Congress.

I find this work most interesting and I hope your peace of mind will not be utterly disturbed when I tell you that Governor Smith will be elected

the next President of the United States.

With my best regards and every well wish for your good self, I remain, as always

Sincerely,

JJR

Defendant's Exhibit (GM) No. 21

6608

GENERAL MOTORS CORPORATION
EXECUTIVE COMMITTEE

May 10, 1923

Haskell
Sloan
P. S. du Pont
Raskob
F. J. Fisher
Mott

1924

Haskell deceased September 9, 1923.
Bassett, Brown, C. T. Fisher, L. P. Fisher and Pratt added September 25, 1924.

1926

Bassett deceased October 17, 1926.

1928

Raskob resigned August 9, 1928.

1929

P. S. du Pont resigned February 7, 1929.
Knudsen and Smith added May 9, 1929.

1930

L. du Pont added February 6, 1930.

1934

F. J. Fisher and L. du Pont resigned February 5, 1934.
Bradley added August 6, 1934.
C. T. Fisher resigned November 5, 1934.

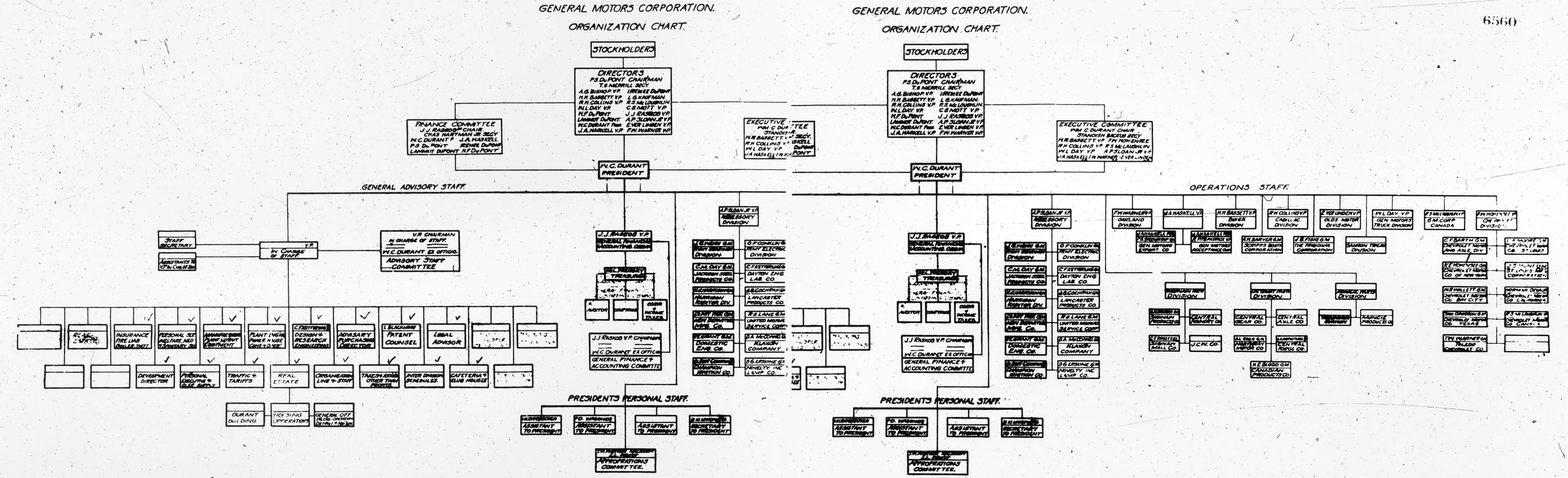
1935

Grant, Hunt, Mooney and Wilson added August 5, 1935.

May 3, 1937

Sloan
Brown
L. P. Fisher
Pratt
Knudsen
Smith
Bradley
Grant
Hunt
Mooney
Wilson

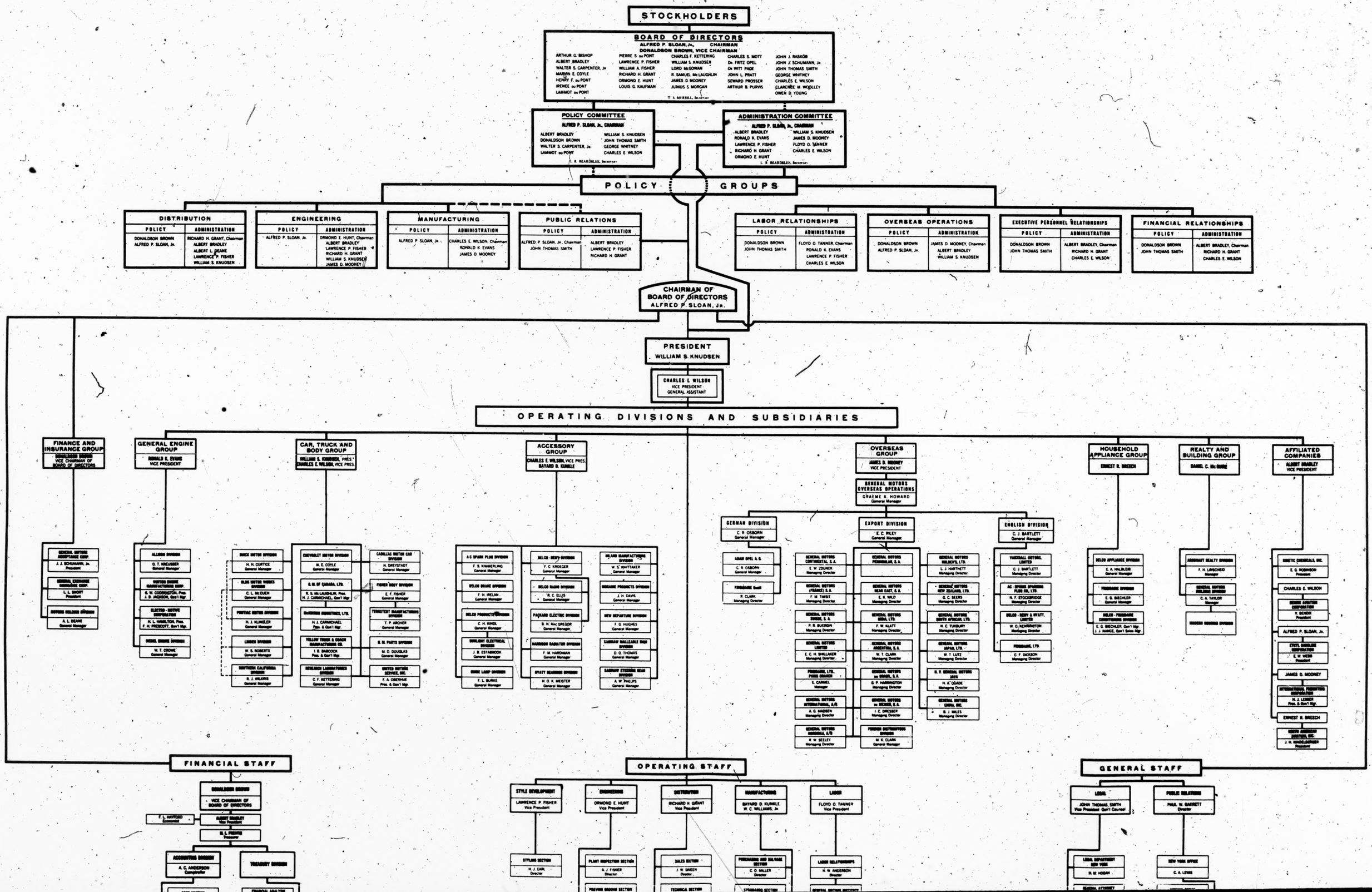
4406



NOTE: Writing in square of left hand corner of chart is illegible. Writing in several squares in center of chart is illegible.

4358

ORGANIZATION CHART
GENERAL MOTORS CORPORATION



S3

ORGANIZATION CHART
CHEVROLET MOTOR COMPANY *
1925

PRESIDENT
W. S. KNUDSEN

ENGINEERING
CHIEF ENGINEER
O. E. HUNT

MANUFACTURING
V. PRES. IN CHARGE OF MFG.
C. F. BARTH

ASSISTANT TO PRESIDENT
M. E. COYLE

SALES
GENERAL SALES MANAGER
R. H. GRANT

FINANCIAL
DIVISIONAL COMPTROLLER
J. D. RULE

ASSY. PLANT MANAGERS
- FLINT — E. C. SHAW
- JANESVILLE — L. I. STEWART
- NORWOOD — R. S. MONTGOMERY
- OAKLAND — W. C. WILLIAMS, JR.
- ST. LOUIS — J. F. WILDGEN
- TARRYTOWN — A. PITKETHLEY
- BUFFALO — E. W. DAVIS

MFG. PLANT MANAGERS
- FLINT — MANAGER FLINT PLANTS — C. E. WETHERALD
- MOTOR — W. NOTMAN
- PRESSED METAL — B. A. WADERLOW
- DETROIT — F. O. TANNER
- FORGE — A. A. MOTHERWELL
- GEAR & AXLE — R. B. TOWNSEND
- BAY CITY — S. A. WOODMANCY
- TOLEDO — G. D. MOORE

DEPARTMENT MANAGERS
- PRODUCTION & STANDARDS — G. LEFEBVRE
- TRAFFIC DIRECTOR — C. R. SCHARFF
- GENERAL PURCHASING AGENT — D. P. O'KEEFE
- PARTS DISTRIBUTION — L. H. PARR

ASS'T. GENERAL SALES MGRS.
- C. E. DAWSON
- H. J. KLINGLER

REGIONAL MANAGERS
- M. D. DOUGLAS - NORWOOD
- L. K. COOPER - CHICAGO
- F. W. FUHR - ST.LOUIS
- F. N. COATES - OAKLAND
- D. E. RALSTON - TARRYTOWN

ADVERTISING MANAGER
J. E. GRIMM, JR.

RESIDENT COMPTROLLERS
- BAY CITY — E. M. LITCHFIELD
- BUFFALO — H. L. CLARK
- DETROIT — J. A. JAMISON
- FLINT — E. R. PALMER
- JANESVILLE — A. E. JACOBSON
- NORWOOD — M. S. ANDERSEN
- OAKLAND — E. W. IVEY
- ST. LOUIS — D. H. JOHNSON
- TARRYTOWN — F. G. LOEHMANN
- TOLEDO — W. M. WELDISHOFER

OFFICE MANAGER
B. STIRTON

* SALES OPERATIONS ALSO UNDER:

CHEVROLET MOTOR COMPANY OF CALIFORNIA
CHEVROLET MOTOR COMPANY OF KANSAS CITY
CHEVROLET MOTOR COMPANY OF NEW JERSEY
CHEVROLET MOTOR COMPANY OF ST. LOUIS
CHEVROLET MOTOR COMPANY OF TEXAS
CHEVROLET MOTOR OHIO COMPANY

DECEMBER 31, 1925

S6

1925

4261

GENERAL MOTORS CORPORATION

STOCKHOLDERS

BOARD OF DIRECTORS

ALFRED P. SLOAN, Jr., CHAIRMAN
DONALDSON BROWN, VICE CHAIRMAN

ARTHUR G. BISHOP
ALBERT BRADLEY
WALTER S. CARPENTER, Jr.
MARVIN E. COYLE
HENRY F. du PONT
IRENEE du PONT
LAMMOT du PONT
PIERRE S. du PONT
LAWRENCE P. FISHER
WILLIAM A. FISHER
RICHARD H. GRANT
ORMOND E. HUNT
LOUIS G. KAUFMAN
CHARLES F. KETTERING
WILLIAM S. KNUDSEN
LORD McGOWAN
R. SAMUEL McLAUGHLIN
JAMES D. MOONEY
JUNIUS S. MORGAN
CHARLES S. MOTT
Dr. FRITZ OPEL
Dr. WITT PAGE
JOHN L. PRATT
SEWARD PROSSER
ARTHUR B. PURVIS
JOHN J. RASKOB
JOHN J. SCHUMANN, Jr.
JOHN THOMAS SMITH
GEORGE WHITNEY
CHARLES E. WILSON
CLARENCE M. WOOLLEY
OWEN D. YOUNG

T. S. MISPEL, Secretary

POLICY COMMITTEE

ALFRED P. SLOAN, Jr., CHAIRMAN

ALBERT BRADLEY
DONALDSON BROWN
WALTER S. CARPENTER, Jr.
LAMMOT du PONT
WILLIAM S. KNUDSEN
JOHN THOMAS SMITH
GEORGE WHITNEY
CHARLES E. WILSON

I. B. BEARDSLEE, Secretary

ADMINISTRATION COMMITTEE

ALFRED P. SLOAN, Jr., CHAIRMAN

ALBERT BRADLEY
RONALD K. EVANS
LAWRENCE P. FISHER
RICHARD H. GRANT
ORMOND E. HUNT
WILLIAM S. KNUDSEN
JAMES D. MOONEY
FLOYD D. TANNER
CHARLES E. WILSON

I. B. BEARDSLEE, Secretary

POLICY GROUPS

DISTRIBUTION	
POLICY	ADMINISTRATION
DONALDSON BROWN ALFRED P. SLOAN, Jr.	RICHARD H. GRANT, Chairman ALBERT BRADLEY ALBERT L. DEANE LAWRENCE P. FISHER WILLIAM S. KNUDSEN

ENGINEERING	
POLICY	ADMINISTRATION
ALFRED P. SLOAN, Jr.	ORMOND E. HUNT, Chairman ALBERT BRADLEY LAWRENCE P. FISHER RICHARD H. GRANT WILLIAM S. KNUDSEN JAMES D. MOONEY

MANUFACTURING	
POLICY	ADMINISTRATION
ALFRED P. SLOAN, Jr.	CHARLES E. WILSON, Chairman RONALD K. EVANS JAMES D. MOONEY

PUBLIC RELATIONS	
POLICY	ADMINISTRATION
ALFRED P. SLOAN, Jr., Chairman JOHN THOMAS SMITH	ALBERT BRADLEY LAWRENCE P. FISHER RICHARD H. GRANT

LABOR RELATIONSHIPS	
POLICY	ADMINISTRATION
DONALDSON BROWN JOHN THOMAS SMITH	FLOYD D. TANNER, Chairman RONALD K. EVANS LAWRENCE P. FISHER CHARLES E. WILSON

OVERSEAS OPERATIONS	
POLICY	ADMINISTRATION
DONALDSON BROWN ALFRED P. SLOAN, Jr.	JAMES D. MOONEY, Chairman ALBERT BRADLEY WILLIAM S. KNUDSEN

EXECUTIVE PERSONNEL RELATIONSHIPS	
POLICY	ADMINISTRATION
DONALDSON BROWN JOHN THOMAS SMITH	ALBERT BRADLEY, Chairman RICHARD H. GRANT CHARLES E. WILSON

FINANCIAL RELATIONSHIPS	
POLICY	ADMINISTRATION
DONALDSON BROWN JOHN THOMAS SMITH	ALBERT BRADLEY, Chairman RICHARD H. GRANT CHARLES E. WILSON

CHAIRMAN OF BOARD OF DIRECTORS
ALFRED P. SLOAN, Jr.

PRESIDENT
WILLIAM S. KNUDSEN

CHARLES E. WILSON
VICE PRESIDENT
GENERAL ASSISTANT

OPERATING DIVISIONS AND SUBSIDIARIES

FINANCE AND INSURANCE GROUP
DONALDSON BROWN
VICE CHAIRMAN OF BOARD OF DIRECTORS

- GENERAL MOTORS ACCEPTANCE CORP. — J. J. SCHUMANN, Jr., President
- GENERAL EXCHANGE INSURANCE CORP. — L. L. SHORT, President
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JUNE, 1937

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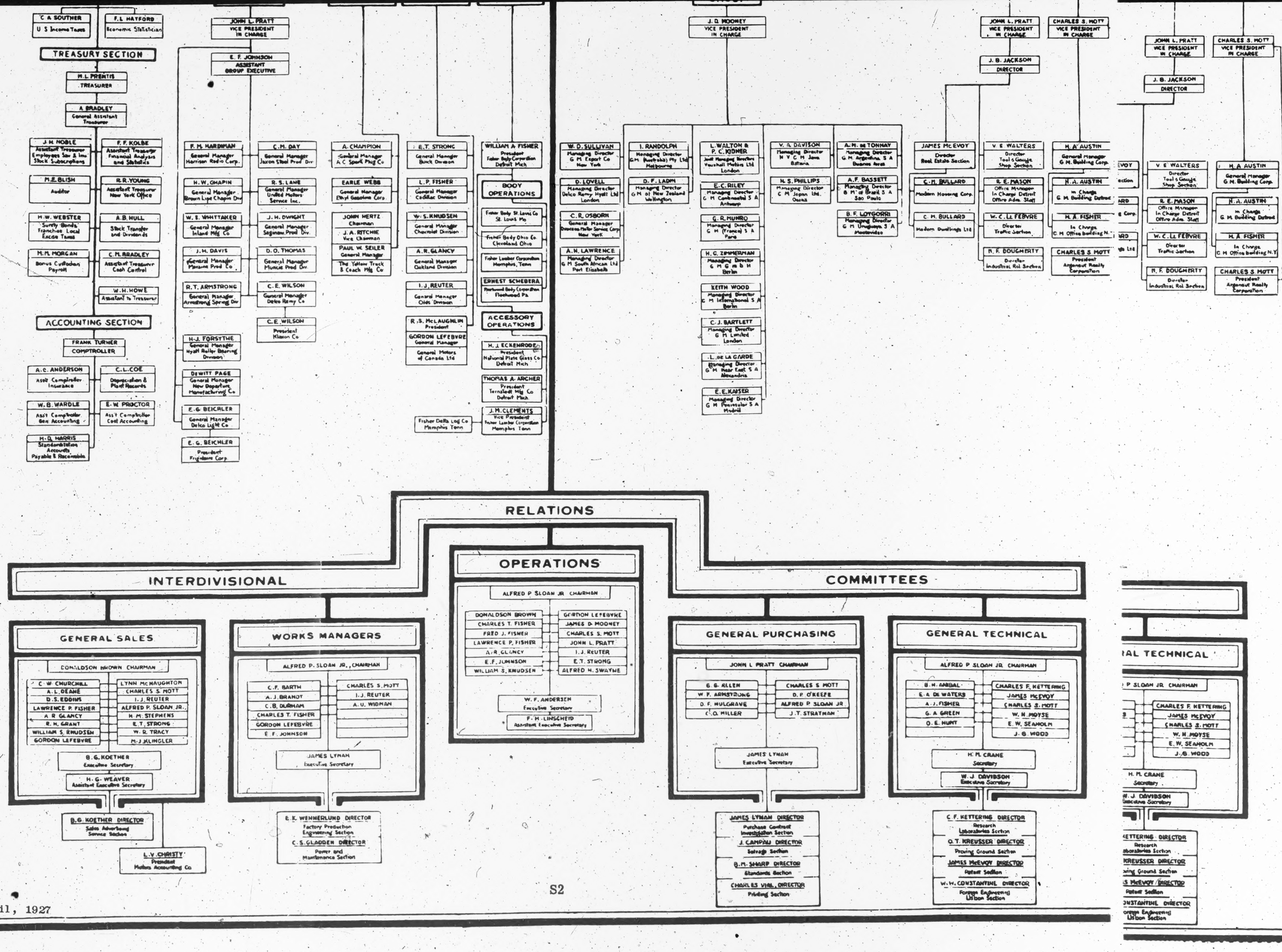
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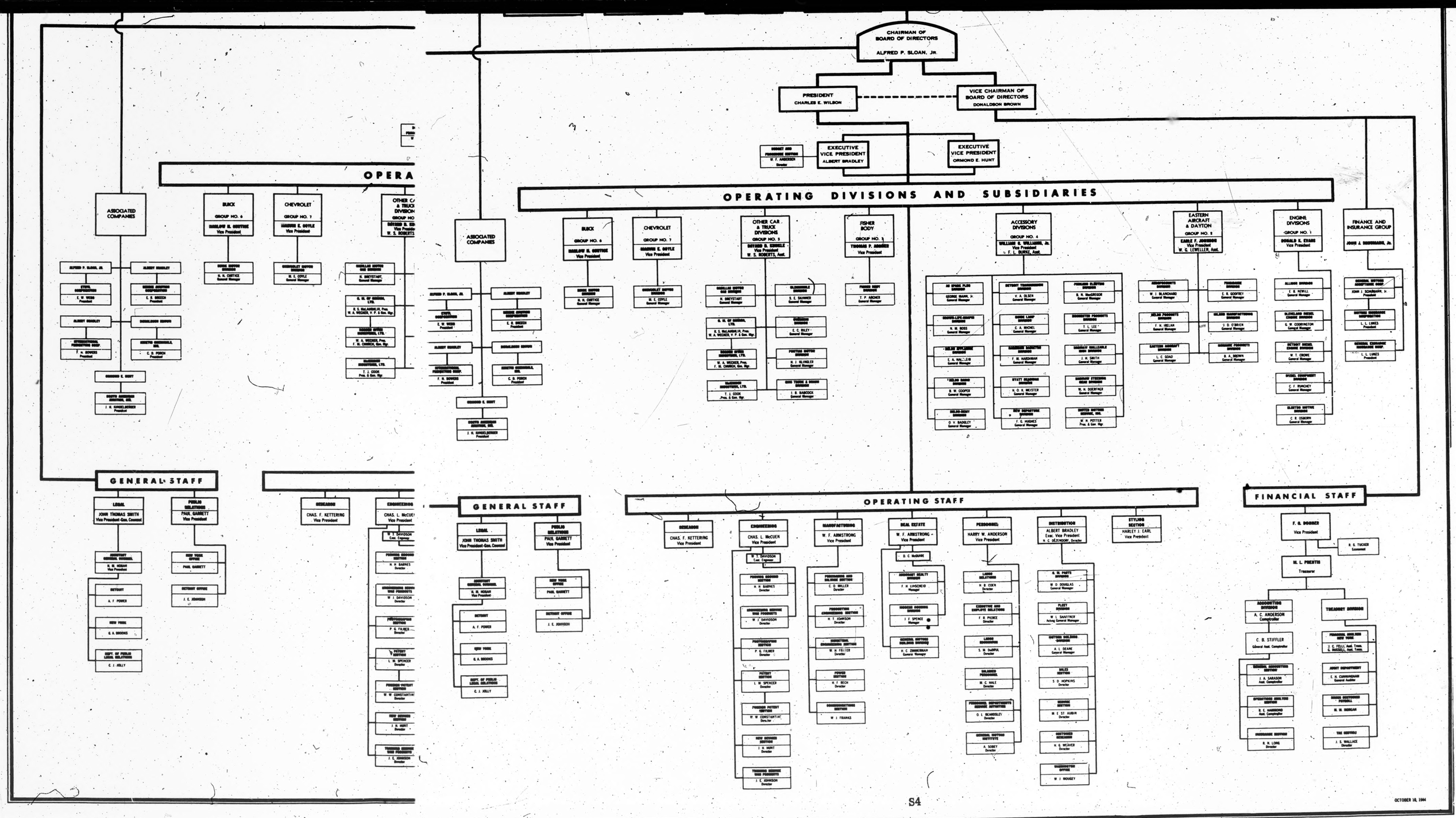
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C.F. KETTERING DIRECTOR
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O.T. KREUSSER DIRECTOR
Proving Ground Section
JAMES McEVOY DIRECTOR
Patent Section
W.W. CONSTANTINE DIRECTOR
Foreign Engineering Liaison Section

April, 1927



OCTOBER 18, 1944

(6570)

Defendants' Tri Defendants' Trial Ex. No.

ORGANIZATION CHART
GENERAL MOTORS CORPORATION

STOCKHOLDERS

BOARD OF DIRECTORS
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THOMAS P. ARCHER, ALBERT BRADLEY, DONALDSON BROWN, WALTER S. CARPENTER, Jr., LAMMOT duP. COPELAND, MARVIN E. COYLE, HARLOW H. CURTICE, FREDERIC G. DONNER, LEWIS W. DOUGLAS, HENRY B. duPONT, ANGUS B. ECHOLS, RONALD K. EVANS, EDWARD F. FISHER, LAWRENCE P. FISHER, LOUIS C. GOAD, RICHARD H. GRANT, ORMOND E. HUNT, EARLE F. JOHNSON, CHARLES F. KETTERING, WILLIAM S. KNUDSEN, R. SAMUEL McLAUGHLIN, CHARLES S. MOTT, JOHN L. PRATT, JOHN J. SCHUMANN, Jr., JOHN THOMAS SMITH, GEORGE WHITNEY, CHARLES E. WILSON

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GENERAL ENGINE— R. K. EVANS, Chairman
HOUSEHOLD APPLIANCE— L. C. GOAD, Chairman
OVERSEAS— E. RILEY, Chairman
PUBLIC RELATIONS— P. GARRETT, Chairman

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CHARLES E. WILSON

EXECUTIVE VICE PRESIDENT
ORMOND E. HUNT

EXECUTIVE VICE PRESIDENT
MARVIN E. COYLE

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EXECUTIVE VICE PRESIDENT
CHAIRMAN FINANCIAL POLICY COMMITTEE
ALBERT BRADLEY

EXECUTIVE VICE PRESIDENT
CHAIRMAN FINANCIAL POLICY COMMITTEE
ALBERT BRADLEY

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STYLING — HARLEY J. EARL, Vice President

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- PHOTOGRAPHIC SECTION — P. C. FILBER, Director
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- FOREIGN PATENT SECTION — W. W. CONSTANTINE, Director
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- EMPLOYE INFORMATION — J. F. PEDDEE, Director
- EMPLOYE RECREATION — L. N. LASEAU, Director
- GENERAL OFFICES SUGGESTION PLAN — J. M. KERPE, Director

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- WAGE ANALYSIS AND SPECIAL SECTION — W. N. FRATER, Director

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- REAL ESTATE SECTION — F. G. TYLLE, Director
- ARCHITECT, REALTY DIVISION — F. H. LINSCHEID, Manager
- MODERN HOUSING DIVISION — J. F. SPENCE, Manager

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- INSTITUTIONAL RELATIONS — J. E. JOHNSON
- PLANT CITY & FIELD RELATIONS — L. H. POWERS
- NEW YORK OFFICE — W. B. ADSIT
- STOCKHOLDER RELATIONS — I. B. DIMOND
- SOCIAL AND ECONOMIC RELATIONS — S. M. DUBRUL

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- R. S. TUCKER, Economist

M. L. PRICE, Treasurer

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- AUDIT DEPARTMENT — E. H. CUNNINGHAM, General Auditor
- PAYROLL — W. M. MORGAN
- TAX SECTION — J. S. WALLACE, Director

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- ASSISTANT GENERAL COUNSEL — H. M. HOLAR, Vice President
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- NEW YORK — G. A. BROOKS
- DEPT. OF PUBLIC LEGAL RELATIONS — C. J. VOLLY

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- FINANCIAL ANALYSIS, NEW YORK — J. C. FELLI, Asst. Treas.; G. RUSSELL, Asst. Treas.
- AUDIT DEPARTMENT — E. H. CUNNINGHAM, General Auditor
- PAYROLL — M. M. MORGAN
- TAX SECTION — J. S. WALLACE, Director

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BODY GROUP — THOMAS P. ARCHER, Vice President

ACCESSORY GROUP — FRANCIS L. BURKE, Vice President; J. H. SMITH, Asst.

B-O-P ASSEMBLY, DAYTON AND HOUSEHOLD APPLIANCE DIVISIONS GROUP — LOUIS C. GOAD, Vice President; C. B. STIFFLER, Asst.

ENGINE GROUP — DONALD K. EVANS, Vice President

OVERSEAS & CANADIAN GROUP — BAYARD D. KUNKLE, Vice President

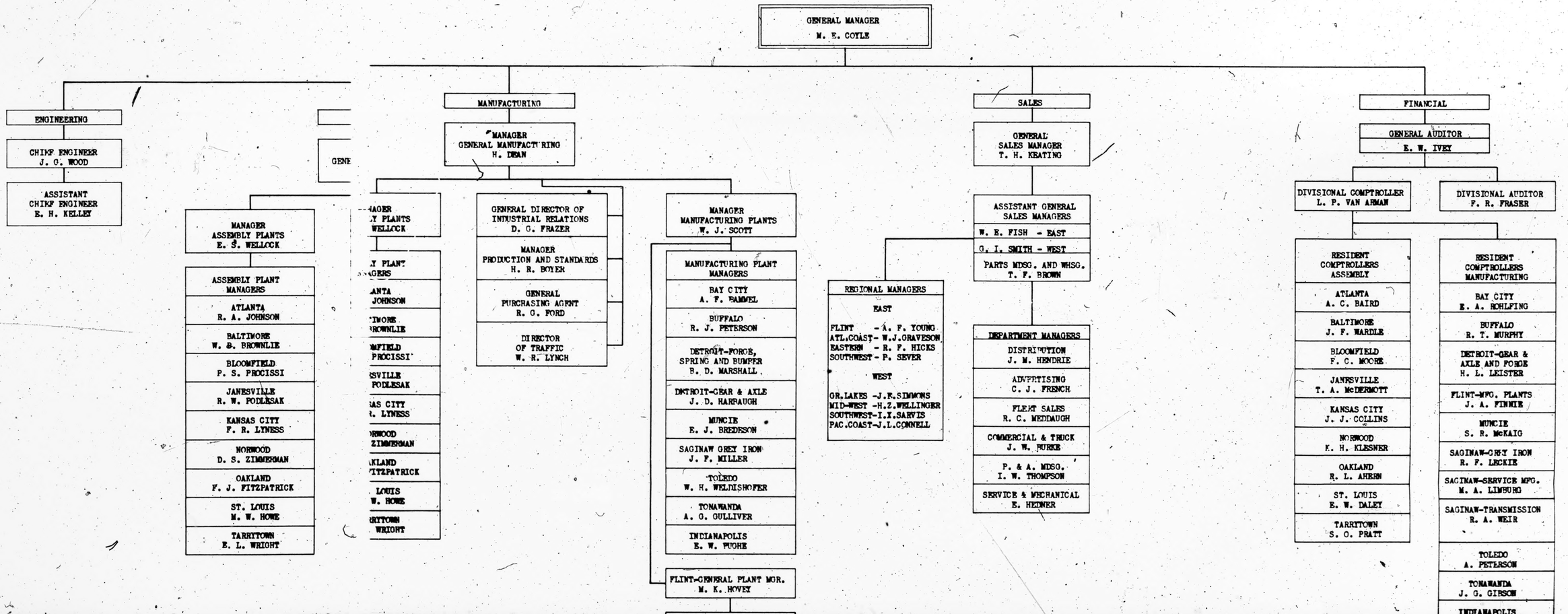
FINANCE AND INSURANCE GROUP — JOHN J. SCHUMANN Jr.

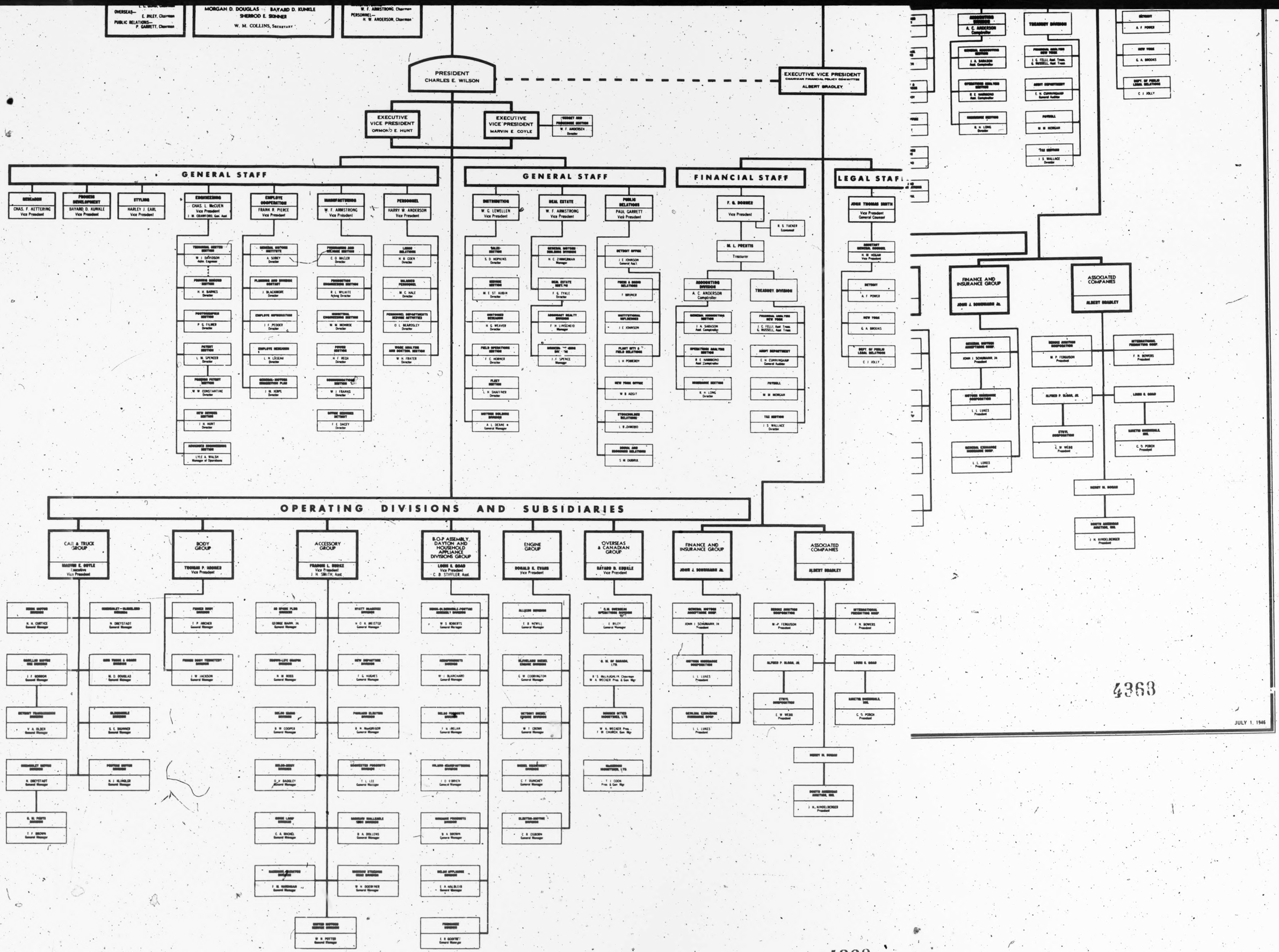
ASSOCIATED COMPANIES — ALBERT BRADLEY

ASSOCIATED COMPANIES — ALBERT BRADLEY

(6571)

ORGANIZATION CHART
CHEVROLET MOTOR DIVISION
OF GENERAL MOTORS CORPORATION
1946

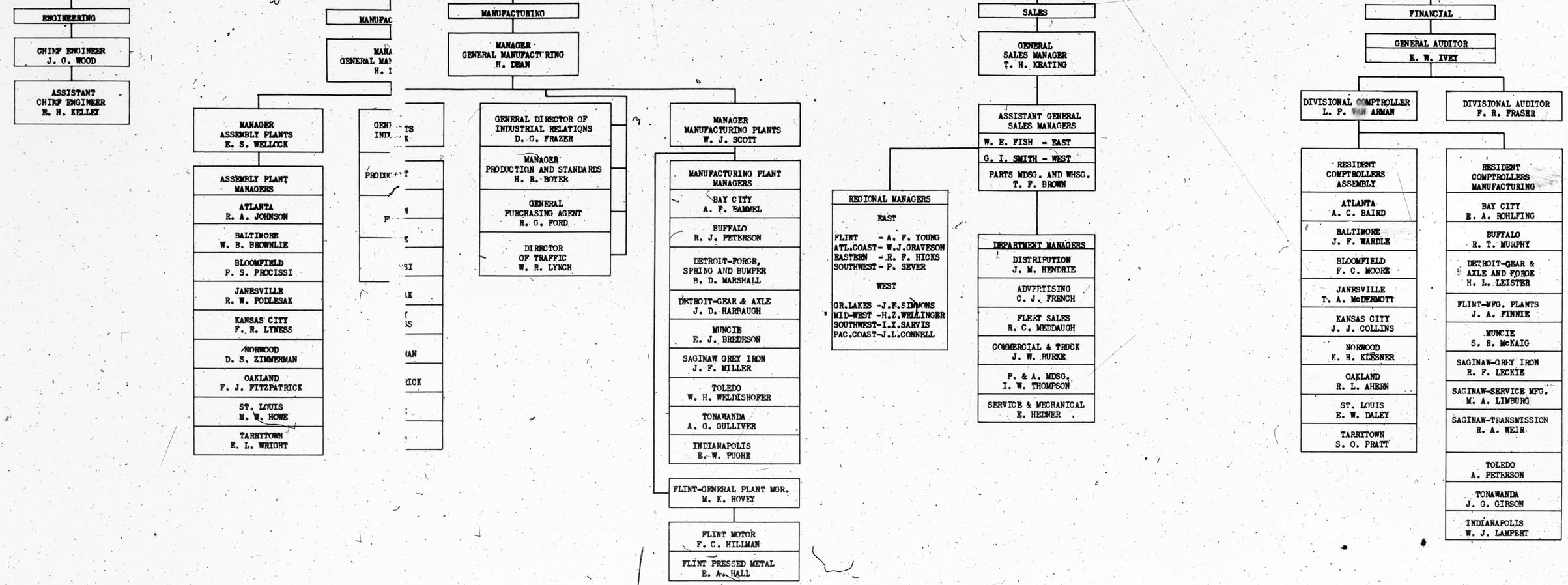




4363

JULY 1, 1946

4363


ENGINEERING
CHIEF ENGINEER
J. G. WOOD
ASSISTANT
CHIEF ENGINEER
B. H. KELLEY
MANUFAC
MANA
GENERAL MA
H. I
MANUFACTURING
MANAGER
GENERAL MANUFACTURING
H. DEAN
MANAGER
ASSEMBLY PLANTS
E. S. WELLOCK
ASSEMBLY PLANT
MANAGERS
ATLANTA
R. A. JOHNSON
BALTIMORE
W. B. BROWNLIE
BLOOMFIELD
P. S. PROCISSI
JANESVILLE
R. W. FODLESAK
KANSAS CITY
F. R. LYNESS
NORWOOD
D. S. ZIMMERMAN
OAKLAND
F. J. FITZPATRICK
ST. LOUIS
M. W. HOWE
TARRYTOWN
E. L. WRIGHT
GENERAL DIRECTOR OF
INDUSTRIAL RELATIONS
D. G. FRAZER
MANAGER
PRODUCTION AND STANDARDS
H. R. BOYER
GENERAL
PURCHASING AGENT
R. G. FORD
DIRECTOR
OF TRAFFIC
W. R. LYNCH
MANAGER
MANUFACTURING PLANTS
W. J. SCOTT
MANUFACTURING PLANT
MANAGERS
BAY CITY
A. F. BAMMEL
BUFFALO
R. J. PETERSON
DETROIT-FORGE,
SPRING AND BUMPER
B. D. MARSHALL
DETROIT-GEAR & AXLE
J. D. HARBAUGH
MUNCIE
E. J. BREDESON
SAGINAW GREY IRON
J. F. MILLER
TOLEDO
W. H. WELDISHOFER
TONAWANDA
A. G. GULLIVER
INDIANAPOLIS
E. W. PUCHE
FLINT-GENERAL PLANT MGR.
M. K. HOVEY
FLINT MOTOR
F. C. HILLMAN
FLINT PRESSED METAL
E. A. HALL
SALES
GENERAL
SALES MANAGER
T. H. KEATING
ASSISTANT GENERAL
SALES MANAGERS
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G. I. SMITH - WEST
PARTS MDSG. AND WHSG.
T. F. BROWN
REGIONAL MANAGERS
EAST
FLINT - A. F. YOUNG
ATL.COAST - W.J.GRAVESON
EASTERN - R. F. HICKS
SOUTHWEST - P. SEVER
WEST
GR.LAKES - J.R.SIMMONS
MID-WEST - H.Z.WELLINGER
SOUTHWEST - I.I.SARVIS
PAC.COAST - J.L.CONNELL
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ADVERTISING
C. J. FRENCH
FLEET SALES
R. C. MEDDAUGH
COMMERCIAL & TRUCK
J. W. BURKE
P. & A. MDSG.
I. W. THOMPSON
SERVICE & MECHANICAL
E. HEDNER
FINANCIAL
GENERAL AUDITOR
E. W. IVEY
DIVISIONAL COMPTROLLER
L. P. VAN ARMAN
DIVISIONAL AUDITOR
F. R. FRASER
RESIDENT
COMPTROLLERS
ASSEMBLY
ATLANTA
A. C. BAIRD
BALTIMORE
J. F. WARDLE
BLOOMFIELD
F. C. MOORE
JANESVILLE
T. A. McDERMOTT
KANSAS CITY
J. J. COLLINS
NORWOOD
K. H. KLESNER
OAKLAND
R. L. AHERN
ST. LOUIS
E. W. DALEY
TARRYTOWN
S. O. PRATT
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COMPTROLLERS
MANUFACTURING
BAY CITY
E. A. ROHLFING
BUFFALO
R. T. MURPHY
DETROIT-GEAR &
AXLE AND FORGE
H. L. LEISTER
FLINT-MFG. PLANTS
J. A. FINNIE
MUNCIE
S. R. McKAIG
SAGINAW-GREY IRON
R. F. LECKIE
SAGINAW-SERVICE MFG.
M. A. LIMBURG
SAGINAW-TRANSMISSION
R. A. WEIR
TOLEDO
A. PETERSON
TONAWANDA
J. G. GIBSON
INDIANAPOLIS
W. J. LAMPERT

June 1, 1946

Defendant's Exhibit (GM) No. 22

6609

GENERAL MOTORS CORPORATION
FINANCE COMMITTEE

May 10, 1923

P. S. du Pont	L. du Pont
Raskob	Baker
H. F. du Pont	Prosser
I. du Pont	Stettinius
Haskell	Brown
Sloan	

1924

Haskell deceased September 9, 1923.
F. J. Fisher and Whitney added September 25, 1924.

1925

Stettinius deceased September 3, 1925.
Morgan added September 30, 1925.

1927

Carpenter added February 10, 1927.

1928

Raskob resigned August 9, 1928.

1929

Raskob and Mott added May 9, 1929.

1933

Bradley added November 6, 1933.

1934

F. J. Fisher resigned November 5, 1934.

May 3, 1937

P. S. du Pont	Brown
Raskob	Sloan
H. F. du Pont	Whitney
I. du Pont	Morgan
L. du Pont	Carpenter
Baker	Mott
Prosser	Bradley

Defendant's Exhibit (GM) No. 23

6610

GENERAL MOTORS CORPORATION

POLICY COMMITTEE

May 3, 1937

Bradley
Brown
Carpenter
L. du Pont
Knudsen
Sloan
Smith
Whitney
Wilson

1940

Hunt added August 5, 1940.
Knudsen resigned September 3, 1940.

June 3, 1946

Bradley
Brown
Carpenter
L. du Pont
Sloan
Smith
Whitney
Wilson
Hunt

4408

Defendant's Exhibit (GM) No. 24

6611

June 3, 1946

Archer
Bradley
Coyle
Curtice
Donner
Evans
Goad
Hunt
Wilson

1948

Kunkle added June 7, 1948.
Burke and Godfrey added August 2, 1948.

1949

Kunkle resigned March 1, 1949.
Archer off August 10, 1949.
Hunt resigned September 30, 1949.

1950

Burke resigned December 9, 1950.
Coyle resigned December 31, 1950.

1951

Gordon, Kindl, Klingler, Osborn added January 1, 1951.
Skinner added January 8, 1951.

January 1953

Wilson resigned.

February 1, 1953

Bradley
Curtice
Donner
Evans
Goad
Godfrey
Gordon
Kindl
Klingler
Osborn
Skinner

4409

Defendant's Exhibit (GM) No. 25

GENERAL MOTORS CORPORATION
FINANCIAL POLICY COMMITTEE

6612

June 3, 1946

Bradley
Brown
Carpenter
Donner
Pratt
Sloan
Smith
Whitney
Wilson

1947

Smith deceased September 28, 1947.
Echols added December 1, 1947.

1949

Carpenter resigned June 6, 1949.
Copeland added June 6, 1949.

1950

Alexander added December 4, 1950.

1951

Curtice added January 8, 1951.

1952

Pratt resigned January 7, 1952.
Clay added January 7, 1952.

January 19, 1953

Wilson resigned.

February 1, 1953

Bradley
Brown
Donner
Sloan
Whitney
Echols
Copeland
Alexander
Curtice
Clay

4410

Defendant's Exhibit (GM) No. 26

File 166

GENERAL MOTORS CORPORATION 6613

NEW YORK, N.Y.

1764 Broadway,
July 16, 1918

Mr. Alfred P. Sloane, Jr.,
President UNITED MOTORS CORPORATION
28 West 42d Street, New York.

My dear Mr. Sloane:

I am enclosing herewith for your perusal draft of proposed Bonus Plan of the General Motors Corporation.

I am going to ask you to read it over and then in the next two or three days give me a chance to talk with you about it. We are anxious to get it in shape for final submission to our Board of Directors next week.

You will notice that there are three documents:

1st - Letter transmitting the Plan to the Executive Committee;
2nd - Bonus Plan for publication;
3rd - Method of Administering Bonus Plan.

The last document is intended to be strictly confidential and to be put in the hands of members of the Committees and Heads of Divisions only.

I stopped at your office for a moment this morning as I was in the building in connection with a dentist's call, intending to talk with you about the matter.

I remain with regards

Yours very truly,

Vice President

Enclosure

BY MESSENGER

4411

Defendant's Exhibit (GM) No. 27

6614

Subject
1—166
(Bonus Plan)

Mr. J. A. Haskell, Vice President,
General Motors Company,
1764 Broadway,
New York, N. Y.

YOUR FILE 166

My dear Mr. Haskell:—

I have your letter of July 16th with enclosures as stated. I regret that I was not in the office this morning when you called.

You may be assured that I will look over this bonus plan with a great deal of interest. Frankly, there is nothing that we need more at the present time than something of this kind. It is getting more and more difficult to keep our organization lined up. There seems to be an astounding amount of unrest everywhere, even among those that you would hardly think it possible. I am meeting the situation the best I can as an emergency measure, but appreciate that there is nothing very constructive in what I am doing, but I have been working on several plans. I just mention these things to show you how thoroughly necessary a thing of this kind is and how helpful it will be to all of us.

Very truly yours,

A.P.S.Jr./K

E

Defendant's Exhibit (GM) No. 28

6615

October 2, 1923.

To: Finance Committee (General Motors Corporation)

From: Chairman

Subject: Managers Securities Company

On August 9, 1923, the Board of Directors of your Company considered the plan of the Managers Securities Company and adopted the following resolution:

> "RESOLVED, that the Board of Directors approves in principle the plan with regard to the proposed Managers Securities Company recommended by the Finance Committee in its report of August 7, 1923, and refers said plan back to the Finance Committee to be worked out in detail and submitted to the stockholders for ratification, provided the duPont Company is willing to enter into the arrangement outlined in said plan."

As the result of long negotiation between the officers of the two companies, the officers of the duPont Company are willing to recommend the plan to the duPont Board with the following modification:

First—That the amount of stock sold shall be the equivalent of 2,200,000 shares instead of 2,667,000 shares of General Motors Corporation common stock.

Second—That the contract between the General Motors Corporation and the Managers Securities Company be amended to provide that the General Motors Corporation shall pay to the Managers Securities Company on or before January 1st of each year, beginning January

1, 1924, and ending January 1, 1931, the sum of $2,000,000. on account of said contract and if at any time the cumulative amount due the Managers Securities Company under said contract from its beginning is less than the rate of $2,000,000. per annum from and including the year 1923, then and in that event the difference shall be nevertheless paid by the General Motors Corporation to the Managers Company and treated as a loan, which loan, with interest at the rate of 6% per annum, shall be repaid by the Managers Company to the General Motors Corporation when the amount due under the contract shall equal the accumulation of these $2,000,000. annual payments; otherwise the amount shall not be due until the maturity or payment of the bonds of the Managers Company. This modification providing a minimum annual payment to the Trustee makes it possible to declare bonds in default for non-payment of interest.

A plan revised to include these amendments, together with such other modifications as these make necessary has been prepared and is enclosed herewith.

This revised plan provides for two classes of stock for the Managers Securities Company and a change in the recapture conditions. This is done in order to enable the Company to buy an employe out of the whole or part of his investment.

—2—

In the opinion of the writer the plan as now drafted will be to the advantage of General Motors Corporation and it is recommended that the amended plan be adopted by the Finance Committee and submitted fo. appropriate action thereon to the stockholders at a special meeting to be held

on November , 1923, and that a record of stockholders entitled to vote thereat be taken at the close of business on October , 1923.

J. J. RASKOB,
Chairman.

PLAN OF MANAGERS SECURITIES COMPANY
(Revised October 1, 1923)

1. The General Motors Corporation will cause a corporation (Managers Securities Company or other appropriate name) to be organized under the laws of Delaware with an authorized capital of $5,000,000., divided into

$4,000,000. of Class A stock, and
$1,000,000. of Class B stock.

In liquidation the Class A stock shall be preferred as to the par value thereof plus the total net amount after taxes accruing to the credit of the Company by reason of a certain contract between the Company and the General Motors Corporation, dated ; and there shall be credited to a Class A surplus account for the benefit of the Class A stock on the books of the Corporation, when and as received, the net amount earned under the aforesaid contract after providing for taxes. This Class A surplus may be used for the payment of special dividends on Class A stock or for the purpose of retiring such Class A stock either in whole or in part at a price equal to the par value thereof plus its pro rata share of this Class A surplus account. All other net income of the Corporation shall be credited to a Class B surplus account.

Class B stock in liquidation shall receive all of the balance of the property.

All dividends paid, except special dividends on the Class A stock as herein provided, shall be paid from Class B surplus, and the amount of dividends paid to the Class A and Class B stocks, respectively, shall be in the proportion that the Class A capital and surplus and the Class B capital and surplus, respectively, bear to each other.

Upon the organization of the Managers Securities Company it will enter into a written contract with the General Motors Corporation wherein it will be covenanted and agreed

(a) Upon the part of the Managers Securities Company that it will sell and deliver to General Motors Corporation its entire authorized issue of capital stock for $5,000,000. cash.

(b) Upon the part of General Motors Corporation that in consideration of the premises the General Motors Corporation shall, on or before April 1st

in each year, commencing with April 1st, 1924, and ending April 1st, 1931, pay to the Managers Securities Company 5% of the net earnings of the General Motors Corporation for the preceding calendar year after deducting from said net earnings 7% on the capital employed during said year. This contract will further provide that on or before January 1st of each year beginning on or before January 1st, 1924, and including January 1st, 1931, the General Motors Corporation will pay $2,000,000. in cash to Managers Securities Company on account of amount due under this contract and the balance due shall be paid on or before April 1st following as aforesaid. Furthermore, in the event that the cumulative amounts due under this contract at any time equal an amount less than the cumulative payments of $2,000,000. per annum above mentioned, then and in that event the General Motors Corporation will continue to make the $2,000,000. annual payments as herein provided and the difference between the cumulative amounts of such payments and the cumulative amounts due hereunder shall be

treated as an unsecured loan by General Motors Corporation to the Managers Securities Company, bearing 6% interest, which loan shall be repaid when the amounts due under said contract equal the total amounts paid by General Motors Corporation, plus interest as aforesaid; and not otherwise until after the payment of the bonds of the Managers Securities Company hereinafter mentioned.

2. The General Motors Corporation will thereupon sell to such managers (including directors who are occupying managerial positions) of the General Motors Corporation and subsidiary companies, as the Finance Committee of the General Motors Corporation, or a sub-committee thereof, shall from time to time determine, such amounts of the capital stock of the Managers Securities Company as said committee shall determine and in such amounts to individual managers as said committee shall fix, at not less than cost upon such terms as to time of payment as may be agreed upon between the purchaser and said committee or sub-committee. All sales of stock of the Managers Securities Company to managers as aforesaid shall be covered by a written contract between the seller and the purchaser wherein it shall be provided that in consideration of the sale upon the terms provided in said contract and the purposes for which said sale is made to the purchaser and of all the premises, the purchasers shall give and grant to General Motors Corporation an irrevocable option to repurchase all or any part of the shares of either or both classes of stock so sold at any time between January 1st

and May 15th in any year up to and including May 15th, 1930, as follows:

Class A stock purchased under this option on account of

the death of an employe or from an employe leaving the Company through no fault of his own shall be paid for in cash and the price paid shall be equal to the par value of said stock plus its portion of the Class A surplus account as shown on the books as of April 30th in the year in which said purchase is made; in all other cases the price paid shall be the par value of the stock plus 80% of its portion of the Class A surplus as aforesaid.

Class B stock shall be purchased at the net asset value thereof as of April 30th in the year in which said option is exercised. For the purpose of determining said net asset value of Class B stock the General Motors Securities Company stock or General Motors Corporation common stock owned by the Managers Securities Company shall be appraised on the basis of the net asset value of General Motors Corporation common stock as shown by the published statement of assets and liabilities of General Motors Corporation as of December 31st of the year preceding the year in which said option is exercised. Payment for purchases so made under option herein granted shall be made by the General Motors Corporation in common stock of the General Motors Corporation at the same net asset value as used in determining the net asset value of the Managers Securities Company stock as hereinabove set forth. If any purchaser dies or ceases to be employed by the General Motors Corporation or a subsidiary corporation thereof during the life of said option the General Motors Corporation shall exercise said option at least with respect to the Class A stock and purchase his Class A stock on the terms and at the price aforesaid. Further, in view of the fact that this plan is designed to have substantially interested as stockholders in the Corporation only men who are actively contributing to the General Motors Corporation's success,

it shall be the duty of the Finance Committee, on or before May 15th of each year, to review the list of the stockholders of the Managers Securities Company for the purpose of determining whether the stockholding of any manager is disproportionate to the service being currently rendered by him to the General Motors Corporation and, if so, to this extent to repurchase either or both classes of his Managers Securities Company stock. The discretion of the Finance Committee in all these matters shall be final and conclusive. In order to facilitate the repurchase of

said stock the certificates evidencing the stock, duly endorsed in blank, shall at the time of sale and delivery by the Seller to the purchaser be placed in escrow with an escrow holder appointed by the Finance Committee of General Motors Corporation, to be held by him under an escrow agreement in the usual form during the existence of said option. In case the option is not exercised on or before the 15th day of May, 1930, the right and obligation to repurchase shall end and the escrow holder shall deliver the stock certificates to the said purchaser or his order on April 15, 1931. At the time the said certificates are placed in escrow the escrow holder shall issue to the said purchaser negotiable certificates evidencing the number of shares so deposited. The purchaser shall have the right to vote and to receive all dividends paid on the Managers Securities Company stock.

3. The Managers Securities Company will purchase stock of the General Motors Securities Company (hereinafter described) representing approximately the equivalent of 2,200,000 shares of General Motors Corporation common

stock at $15. per share, aggregating a total of $33,000,000. Payment therefor shall be made $5,000,000. in cash and $28,000,000. in 7% Collateral Trust Gold Bonds of Managers Securities Company maturing April 15, 1931, which bonds shall be secured by a collateral trust indenture with the Wilmington Trust Company of Wilmington, Delaware, under which all the General Motors Securities Company stock so purchased and the said contract with the General Motors Corporation shall be pledged to secure the payment of the interest and principal of said bonds.

At present the common stock holdings of E. I. duPont deNemours & Company in the General Motors Corporation are in the name of DuPont American Industries, Inc. It is proposed that the name of this Corporation be changed to General Motors Securities Company, that its sole assets consist of General Motors Corporation common stock with no liabilities and that its capital stock be owned by E. I. duPont deNemours & Company and Managers Securities Company. The duPont Company will be in control of the General Motors Securities Company, owning about 70% of its stock outstanding. It is, therefore, provided that in the event the Directors of the General Motors Securities Company elect for any reason to sell all or any part of its holdings of General Motors Corporation

common stock, then and in that event the Managers Securities Company shall(before such sale is made, have the right to purchase its pro rata share of the total assets of the General Motors Securities Company and make full payment therefor by assuming or providing for the payment of its pro rata share of the debts, if any, of the corporation

and surrendering to the corporation for retirement all of its stockholdings in the General Motors Securities Company.

4. The indenture securing the issue of $28,000,000. 7% gold bonds of the Managers Securities Company shall in addition to the usual provisions contained in such instruments provide as follows:

(a) That the Managers Securities Company shall pay to the Wilmington Trust Company, Trustee, on or before April 15th in each year, its entire net income for the preceding twelve months ending April 1st including an amount equal to the amount, less taxes, provided to be paid to it under its contract with the General Motors Corporation; as a sinking fund to be used first for the payment of interest and then for the retirement of said bonds. The Managers Securities Company, however, may withhold from amounts which would otherwise be paid each year to the Trustee under this paragraph an amount of money not to exceed 7% of its total paid in capital and earned surplus as of April 15th of said year, provided always that the total cumulative payments to the Trustee shall never equal an amount less than $2,000,000. per annum accumulated from the beginning to date of such withholding.

(b) That all amounts paid into the sinking fund shall be applied by the Trustee to the payment of interest and retirement of said bonds in the manner provided for in the trust indenture.

(c) Failure for six months after the same shall become due and payable to make any payment required to be made to the sinking fund (including the obligation to pay in each year as aforesaid the amounts provided in said contract between General Motors Corporation and the Managers

Securities Company) shall constitute a default on the part of the Managers Securities Company.

5. Should the seller prefer taking a form of senior security other than the 7% bonds herein contemplated, it is understood that such securities may be issued in whole or in part so long as the provisions surrounding the creation and issuance of same are in line with the provisions of this plan.

Defendant's Exhibit (GM) No. 29

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MEMORANDUM

October 8, 1923.

To Mr. J. J. Raskob

Subject MANAGERS' SECURITIES COMPANY.

Regarding the above and with reference to my telephone conversation with Mr. duPont and yourself this morning, I think you know me well enough to know that I am apt to have rather a strong opinion on subjects that come up for discussion, but there is a class of subjects involving the big broad future that I feel that we all must necessarily have a certain amount of uncertainty about and on account of the great magnitude of our problems, a certain feeling of tremendous responsibility when those subjects come up for discussion and a realization of our limitation in being able to grasp the relation between our particular picture and the tremendous developments that are continually going on. That is my attitude toward this particular matter. I feel that it is a very big undertaking and that it should be approached with all kinds of caution and conservatism.

It is true that we have had a lot of time to consider it, but you appreciate that it is only when you really come to do a thing that you consider it most seriously. I firmly believe that any plan that puts any man in business for himself is a constructive one, but due to the magnitude of this thing and the number of men we are taking in, I think we ought to be more than certain that the work-out is going to be entirely satisfactory.

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Without going into a lot of discussion about the various angles there are to it, I would suggest a procedure substantially as follows:—

1. I believe that the Finance Committee is the best body of men possible in our situation to judge as to the future outlook and to measure the hazard and to properly weigh the present situation of the industry and the future earnings of the Company; also the relation between the future market value and the book value and the many other uncertain elements connected with the situation which are all a matter of judgment and perspective. If they feel that from those standpoints the risk is a good business risk, then I think they should take the position that we should go ahead on some such plan, but we should not definitely determine at least as to the magnitude of the plan but solely that it is one which they can take the responsibility of at least offering to the organization.

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2. The next step would be that the officers of the Corporation would discuss the plan in detail with either those men who are to participate or a representative group of those men. The attitude of these men, after a proper presentation of the facts, in my judgment should then guide the Finance Committee into the final details of the plan; i.e., how broad it should be and all that sort of thing. I do not think that under any circumstances we should sell the plan in any way, shape or manner or that our enthusiasm as to the future of the Corporation should be so expressed as to unduly influence the judgment of those who are coming in. I believe they should be told frankly that here is an opportunity to go in business; they take the profit and they take the risk; that we will be glad to explain the matter in detail

help them to understand it, but we can not go any further and their position is simply to be determined by their own individual judgment. Certainly I could not possibly afford to have the though get abroad that we were trying to get people into this plan because if it did not go along just as we all hope it will, even to a degree, my influence in the organization would be so handicapped that it is a question whether either myself or anyone else who would take a similar position would be worth much more so far as constructive work is concerned.

3. I believe if the first step is taken, followed by the second, then we could safely go ahead, feeling that we had done everything possible to do the right thing by this particular group of men in giving them the opportunity of profiting through the development of the Corporation and that we at least could feel morally satisfied that if it did not turn out as we honestly felt it would that we had done nothing that we could in any way regret.

4. While I do not think it has any bearing upon my position toward the plan as an officer of the Corporation, my position as an individual toward the future of the Corporation is fully evidenced by the fact that I have practically everything that I have in the world in General Motors, and not only that, as you know, I have recently made a very large commitment at the present market increasing my interest still further and have incurred a very heavy obligation, for me at least, for that purpose.

Alfred P. Sloan, Jr.

A.P.S.Jr./K

NOTE: Italics indicate handwriting.

Defendant's Exhibit (GM) No. 30

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Letterhead of

GENERAL MOTORS CORPORATION
224 West 57th Street
New York, N. Y.

Cable Address
"Genmot"
New York

November 22, 1923.

Messrs. Seward Prosser
Henry G. Bishop

Dear Sirs:

Enclosed please find information and final recommendation of distribution of the $5,000,000 available for subscription under the Managers' plan.

I have given on the attached sheets a list of practically all men receiving a salary of $10,000 or more, their position and salary. Before consultation with Messrs. Sloan and Donaldson Brown, I made a rough allotment of the total $5,000,000 among the total number of men. This, all agree, is too wide a distribution, particularly as a great number have not been sufficiently tried to warrant offering them an allotment under the plan. Any reasonable reduction in the total would leave my first allotment about one-half the total $5,000,000, so that in comparing my figures with the final allotment, the former should be multiplied by two.

On going over the figures with Mr. Sloan, a compromise has been reached adopting, in the main, Mr. Sloan's recommendations.

You will notice that no bonus is set down in these lists for Messrs. Sloan, Mott and Raskob. I recommend

$300,000 for each of these gentlemen but would increase Mr. Sloan's allotment to $350,000, if you think it should be greater than the others.

Kindly examine the recommendations and let me know at an early date your criticisms, if you have any. It is somewhat important that this matter be closed speedily.

Very truly yours,

P. S. duPONT,
Chairman.

Enclosure.

CENTRAL OFFICE ADMINISTRATION AND HEADS DIVISIONS

	Position	Salary	P. S. duPont Allotment	Final Allotment	Reserve
Sloan, A.P.Jr.	President	$100,000			
Mott, C. S.	Vice-Pres.	$100,000			
Raskob, J.J.	Vice-Pres.	75,000			
Bassett, H.H.	Buick	100,000	$200,000	$300,000	
Brown, Don	Vice-Pres.	40,000	75,000	150,000	
Rice, H.H.	Cadillac	75,000	75,000	100,000	$ 50,000
Knudsen, W.S.	Chevrolet	50,000	75,000	150,000	
Kettering, C.F.	Laboratory	120,000	100,000	150,000	
Hannum, G.H.	Oakland	75,000	50,000	100,000	50,000
Hardy, A.B.C.	Olds	75,000	50,000	100,000	50,000
Grant, R.H.	Delco Light	25,000		50,000	
Pratt, J.L.	Access. Mgr.	40,000	75,000	150,000	
Page, DeW.	New Departure	50,000	50,000	100,000	
Mooney, J.D.	Export	25,000	50,000	50,000	50,000
McLaughlin, R.S.	Canada	62,000	50,000	75,000	
Day, W. L.	GM Truck	50,000	25,000	50,000	
			$875,000	1,525,000	$200,000

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CENTRAL OFFICE ADMINISTRATION AND HEADS DIVISIONS (Contd.)

	Position	Salary	P. S. duPont Allotment	Final Allotment	Reserve
Cooper, C.C.	GMAC	$ 27,500	$ 40,000	$ 50,000	
Prensky, M.L.	Treasurer	25,000	40,000	50,000	
Smith, J.T.	Atty.	60,000	40,000	50,000	
Johnson, K. E.	Parts Div.		40,000	15,000	$ 15,000
Midgely, Thos.	Chemist	10,000	25,000	25,000	
Reuter, I.	Remy	15,000	40,000	50,000	25,000
Forsythe,H.J.	Hyatt	18,000	40,000	50,000	
Harrison,H.C.	Harrison Rad.	18,000	40,000	50,000	
Dwight, J.H.	Saginaw	24,000	25,000	35,000	15,000
Johnson, W.H.	London			40,000	10,000
Day, C. M.	Jaxon	15,000	20,000	25,000	
Sweet, W.M.	Klaxon	10,500	20,000	25,000	
Johnson, E.N.	Lancaster	10,800	20,000	15,000	
Skillen, D.O.	Muncie Prod.	12,000	20,000	0	
Austin, H.A.	GM Bldg.Detroit	12,000	10,000	0	
Lane, R. S.	United Motors	15,000	20,000	25,000	
Chapin,H.W.	Brown-Lipe-Chapin	36,000	20,000	50,000	
			$460,000	$555,000	$ 65,000

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ASSISTANT GENERAL MANAGERS

	Name	Salary	P. S. duPont Allotment	Final Allotment
Cadillac	Coffin, H. A.	$15,000	$ 30,000	$ 15,000
Olds	Dunning, H. C.	16,200	20,000	25,000
Oakland	Orr, E. M.	25,000	20,000	25,000
G. M. Canada	McLaughlin, G. W.	50,000	20,000	25,000
G. M. Truck	Hurst, H. L.	15,000	15,000	25,000
New Departure	Hughes, F. G.	11,000	15,000	0
Brown-Lipe-Chapin	Cook, S. H.	20,000	10,000	25,000
Laboratory	F. O. Clements	12,000	20,000	
Saginaw Prod.	Thomas, D. O.	12,000	10,000	0
United Motors	Elwood, J. L.	10,000	10,000	0
			$170,000	$140,000

FACTORY MANAGERS

	Name	Salary	P. S. duPont Allotment	Final Allotment	Reserve
Buick	Durham, C. B.	$40,000	$ 40,000	$ 50,000	
Cadillac	Widman, A. U.	24,000	30,000	25,000	$ 25,000
Olds	Scott, J. M.	15,000	25,000	25,000	
Oakland	Lannon, J. D.	12,000	25,000	0	
G. M. Canada	Coad, W. A.	12,000	10,000	0	
Can. Prod.	Cash, A. L.	36,000	15,000	25,000	25,000
G. M. Truck					
New Departure	Simmons, C. B.	10,200	10,000	0	
Harrison					
Hyatt					
Klaxon					
Remy	Wilson, C. E.	10,200	10,000	25,000	
Delco Light	Fordham, T. B.	12,000	10,000	0	
Delco	Christopher, G. T.	10,020	10,000	0	
			$185,000	$150,000	$ 50,000

FACTORY ASSISTANTS AND MANAGERS SUB-FACTORIES

	Name	Position	Salary	P. S. duPont Allotment	Final Allotment	Reserve
Buick	Rose, C. J.	Gen. Supt.	$12,500	$ 20,000	$ 15,000	
	Hughes, J.	Factory #12	11,000	15,000	0	
	Brown			15,000	15,000	
				10,000		
Cadillac	Swan, H. B.	Foundry	10,000	10,000	0	
				15,000		
Chevrolet	Barth, C. F.	Flint	30,000	25,000	25,000	
	Chaffe, W. H.	Plant Mgr.	14,000	10,000	25,000	
	Houghton, T. E.	Flint Works	10,800	10,000	0	
	Keller, K. T.	Mgr. of Mfg.	30,000	25,000	25,000	25,000
	Moore, G. D.	Toledo	18,000	10,000	15,000	
	Motherwell, A. A.	Forge	15,000	10,000	0	
	Wetherald, C. E.	Asst. Flint	10,000	10,000	0	
	Wildgen, J. F.	St. Louis	12,000	15,000	0	
	Williams, W. C.	Oakland	11,000	15,000	0	
		Tarrytown		10,000		
		Cincinnati		15,000		
		Buffalo		15,000		
		Janesville		10,000		
				15,000		
Olds						
Oakland	McGregor, P. H.	Supt. Motor	10,000	15,000	0	
G. M. Canada				10,000		
G. M. Truck				15,000		
Jaxon	Minch, W. B.			10,000	0	
				$330,000	$120,000	$ 25,000

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SALES MANAGERS.

	Name	Salary	P. S. duPont Allotment	Final Allotment	Reserve
Buick	Strong, E. T.	$40,000	$ 40,000	$100,000	
Cadillac	McNaughton, L.	25,000	30,000	50,000	
Chevrolet	Campbell, C.	36,000	40,000	100,000	
Olds	Peasley, G. H.	16,800	15,000	0	
Oakland	Nephler, C. J.	25,000	15,000	15,000	10,000
G. M. Canada					
G. M. Truck					
Hyatt	Brown, W. A.	14,000	10,000	15,000	
Remy	Stone, G. B.	10,200	10,000	0	
Delco Light	Biechler, E. G.	11,700	10,000	0	
Delco	Harrison, O. L.	15,000	10,000	25,000	
Export	Haskell, H. G.	15,000	25,000	25,000	25,000

ASSTS. SALES

Buick	Churchill, C. W.	30,000	20,000	25,000	
Cadillac					
Chevrolet	Dawson, C. K.	20,000	20,000	25,000	
Export	D. Laing	10,080	15,000	0	
Oakland	Tracy, W. R.	20,000	10,000	0	
Olds	Gross, F. A.	12,000	10,000	0	
			$280,000	$380,000	$ 35,000

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SALES, BRANCH MANAGERS AND DISTRICT MANAGERS

	Name	Position	Salary	P. S. duPont Allotment	Final Allotment
Buick	Bennett, A. C.	Dist. Sales Mgr.	$12,000	$15,000	0
	Carter, H. P.	Chicago	15,000	15,000	
	Coss, John D.	Phila.	12,000	15,000	
	Martin, J. F.	Kansas City	10,000	15,000	
	Steenstrup, P. S.	Pacific Coast	12,000	15,000	
	Laudick, L. W.	Washington Br.	10,000	10,000	
	Lunt, Ed. S.	Flint Br.	10,000	10,000	
	Southworth, A.	N. Y. Br.	36,000	15,000	
Cadillac	Harfst, R.	Detroit Br.	12,000	10,000	
	Southerland, L. B.	Chicago Br.	12,000	15,000	
Chevrolet	Clay, C. C.	Atlanta Br.	13,500	10,000	
	Coats, F. N.	Pacific Coast Br.	18,000	10,000	
	Cooper, L. K.	Chicago Br.	15,000	10,000	
	Douglas, M. D.	Flint Br.	14,000	10,000	
	Fuhr, E. W. S.	St. Louis Br.	15,000	10,000	
	Ralston, D. E.	Kansas City Br.	10,000	10,000	
	Semmons, B. G.	Buffalo Br.	10,000	10,000	
	Van Der Zee, A.	Cincinnati Br.	10,000	10,000	
	Young, A. F.	Janesville Br.	18,500	10,000	
		Minneapolis Br.		10,000	
	Eddins, D. S.	Reg. Atlantic Coast	15,000	15,000	
				$250,000	$240,000

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SALES, BRANCH AND DISTRICT (Continued)

	Name	Position	Salary	P. S. duPont Allotment	Final Allotment
Olds				$10,000	0
Oakland	Brown, C. M.	N. Y. Branch	$14,000	10,000	
G. M. Canada				10,000	
G. M. Truck	Kilborn, E. J.	Chicago Branch	10,000	10,000	
	Neill, H. A.	San Francisco Br.	10,000	10,000	
	Stoll, Otto E.	N. Y. Branch	18,000	10,000	
G. M. Export	DeTonnay, A.	Buenos Aires Br.	13,050	10,000	
	Lie, C.	Paris Br.	10,000	10,000	
	Miles, B. J.	Melbourne Br.	10,000	10,000	
	Randolph, I.	Calcutta Br.	10,800	10,000	
	Rumely, L. M.	Sydney Br.	12,000	10,000	
	Tuxbury, N. C.	Foreign Field	12,150	15,000	
	Lawrence, A. N.	London	14,400	10,000	
				10,000	
				10,000	
				10,000	
				$165,000	115,000

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ENGINEERS

	Name	Position	Salary	P. S. duPont Allotment	Final Allotment
Buick	DeWaters, E. A.	Chief Engineer	$15,000	$ 20,000	$ 25,000
Cadillac	Seaholm, E. W.	"	12,000	20,000	25,000
Chevrolet	Hunt, O. E.	"	25,000	20,000	25,000
Olds	Jack, R. K.		15,000	15,000	0
Hyatt	Wells, R. E.		10,000	10,000	0
Delco	Chryst, W. A.		15,000	10,000	25,000
Dayton Wright	Clark, V. E.		12,000	10,000	0
Laboratory	Short, C. R.		12,000	15,000	0
	Davis, J. H.		10,000	10,000	0
		ASSISTANT ENGINEERS			
Buick	Bower, F. A.		15,000	15,000	25,000
	Schenck, R. B.	Ch. Metallurg. Eng.	10,000	10,000	0
	Weckler, H. L.	Works Eng.	12,000	10,000	0
Cadillac	Strickland, W. R.		10,000	15,000	15,000
Central Office	Crane, H. M.	Consulting Eng.	12,000	15,000	0
	Dailey, J. B.	Metallurgist	15,000	10,000	0
	Bergland, E. L.	Power	12,000	10,000	15,000
	Wemmerlund, E. K.	Efficiency	12,000	10,000	0
	Kennington, W. O.	Foreign	13,500	15,000	0
				$240,000	$155,000

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PURCHASING

	Name	Position	Salary	P. S. duPont Allotment	Final Allotment
Buick	Allen, G. C.	Gen. Purch. Agent	$15,000	$ 15,000	$ 25,000
Cadillac				15,000	
Chevrolet	O'Keefe, D. P.	Purch. Agent	12,000	15,000	15,000
Olds				10,000	
Oakland				10,000	
G. M. Canada				10,000	
G. M. Truck				10,000	
New Departure				10,000	
Delco	Cromer, W. E.	Purch. Agent	10,000	10,000	0
Central Off.	Main, J. H.	Director Purch. Sect.	15,000	20,000	0
	Lynah, Jas.	Asst. Dir. " "	10,000	15,000	0
				10,000	
				$150,000	$ 40,000

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TRAFFIC

	Name	Position	Salary	P. S. duPont Allotment	Final Allotment
Buick	Conn, G. C.	Director	$12,500	$15,000	0
	Merrick, A. R.	Gen. Mgr.	12,000	10,000	0
Cadillac					
Chevrolet				10,000	
Olds				10,000	
Oakland					
Central Off.					
				$ 45,000	$ 25,000

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FINANCIAL AND ACCOUNTING

	Name	Position	Salary	P. S. duPont Allotment	Final Allotment
Buick	Longway, R. T.	Asst. Treas.	$10,000	$ 10,000	$ 15,000
	Mallery, N. J.	V.P. & Comp.	20,000	10,000	30,000
Cadillac				10,000	
Chevrolet	Coyle, M. E.	Compt.	15,000	10,000	25,000
Olds				10,000	
Oakland	Mair, Thos.	Compt.	12,000	10,000	
G. M. Truck				10,000	
New Departure				10,000	
Harrison					
Hyatt	Angevine, H. W.	Asst. Treas.	12,000	10,000	
Klaxon					
Remy					
Delco Light	Funkhouser, R. D.	Treas.	11,700	10,000	0
Delco	McCann, G. B.	Treas.	15,000	10,000	0
Export	Murray, A. S.	Treas. & V.P.	15,000	10,000	0
	Swayne, A. H.		25,000		
Central Off.	Souther, C. A.	Taxes	20,000	10,000	
	Turner, Frank	Compt.	20,000	20,000	25,000
	Proctor, E. W.	Asst. Compt.	12,500	10,000	25,000
G. M. Accept.	Martin, R.	Treas.	12,000	10,000	0
	Schumann, J. J., Jr.	V.P.	20,000	20,000	25,000
	Doane, A. L.	V.P.	15,000	10,000	25,000
	Spaidal, D. M.	V.P.	15,000	10,000	25,000
	McMahon, J.	V.P.	13,000	10,000	0
	McCreery, I. G.	San Francisco	10,800	10,000	0
	Myers, J. L.	Mgr. Fin. Sales	10,800	10,000	0
				$240,000	$215,000

LEGAL AND PATENTS

	Name	Position	Salary	P. S. duPont Allotment	Final Allotment
Central Off.	Church, M.	Washington	$10,000	$10,000	0
	Webb, E.	Atty. Detroit	18,000	10,000	$25,000
	Brower, B. E.	Atty. Jackson	10,000	10,000	0
	McEvoy, J.	Patents	18,000	20,000	25,000
	Moore, G. P.	"	12,000	10,000	0
	Spencer, L. M.	"	15,000	10,000	0
	Blackmore, L.	"	10,000	10,000	0
				$80,000	$50,000

4435

MISCELLANEOUS

	Name	Position	Salary	P. S. duPont Allotment	Final Allotment
Buick	Sarvis, A. H.	Service Dir.	$12,000	$ 15,000	0
Cadillac	Carson, C. M.	Industrial	14,400	10,000	0
Chevrolet	Baldwin, C. B.	Service	10,500	15,000	0
	Lord, G. F.	Advertising	15,000	10,000	0
Central Off.	Barr, Lockwood	Publicity	12,000	10,000	0
	Beardslee, L. R.	Secy. Exec. Com.	10,000	10,000	0
	Merrill, T. S.	Secy.	12,000	10,000	15,000
	Hull, A. B.	Stock Transfer	10,000	10,000	0
Olds		Service		15,000	0
Central Off.	Eason, C. M.	Asst. to Pres.	10,000	10,000	0
	Hebner, A. K.	"	12,000	10,000	0
	Horner, F. C.	"	12,000	10,000	0
	Jackson, J. B.	" to V.P.	10,000	10,000	0
	Hickey, H. T.	Service Ad. Staff	15,000	15,000	0
	Koether, B. G.	Sales Adv. Staff	18,000	15,000	25,000
	Abbott, H. W.	By-Products		15,000	
	Barton, H. L.	Fac. Sec. Adv. Staff	24,000	15,000	40,000
	Robie, F. C.	Dept. Mgr. Adv. Staff	12,000	15,000	25,000
	LaFarge, O. H. P.	Asst. to V.P.	12,500	10,000	0
	Lawrence, A. N.			25,000	25,000
				$ 255,000	$130,000

	Final Allotment	Reserve
GRAND TOTAL	$3,849,000	$375,000

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E

4436

Defendant's Exhibit (GM) No. 31

6639

BOARD RECOMMENDATIONS FOR 1924.

Special report from the President (Secy's. No. 1582), held over from the last meeting, was discussed and ordered filed.

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6640

This Report No. 1562 is to be treated as a special report to be considered at the meeting in Detroit October 28th

GENERAL MOTORS CORPORATION

TO Executive Committee

FROM Alfred P. Sloan, Jr.

SUBJECT Matter of Bonus Recommendations for the Year 1924.

DATE October 23, 1924.

COPIES FOR

October 23, 1924.

To: Executive Committee

From: Alfred P. Sloan, Jr.

Subject: MATTER OF BONUS RECOMMENDATIONS FOR THE YEAR 1924.

Based on earnings for a normal year, the amount available for the Corporation's bonus fund amounts to several million dollars. The Bonus Plan provides among other things that the distribution of this fund be based entirely on the recommendations of the President. I therefore feel that the responsibility in this respect is very great. I say "very great", because it must be recognized that if the distribution is equitable and constructive, and if it is accepted as such by the organization, a great deal of goodwill is bound to flow from same. If, however, there should be a contrary re-action, certain ill-will would be created, a liability set up, and a condition might even result indicating it would have been better to have made no distribution at all. The authority lodged with the President is, as before stated, not only very broad, but provides further that any recommendation whatsoever made by the President to the Finance Committee, if approved by that Committee, becomes binding upon the Corporation. The Finance Committee can, naturally, be only concerned in the matter in a general way, and this tends to increase the President's responsibility.

According to the plan, it is not essential that the Executive Committee deal with this matter at all, but I am taking the liberty of submitting this entire picture to the Executive Committee, irrespective of the rules governing, in order that this Committee may make suggestions, recommendations, or criticisms, and still further, in order that all may be fully informed.

Previous to Mr. duPont's administration, so far as I was acquainted with the operation of the Bonus Plan, there was no scheme worked out under which the available amount was distributed. (The first year we dealt with the matter, the Plan was reinstated so late in that year we had to do the best we could in the time available. Last year Mr. Donaldson Brown and myself gave a great deal of thought to the matter, particularly because in 1923 the situation was additionally complicated by the injection of the Managers Securities Company into the picture. As a result of this study I developed a procedure which was distributed to all members of the organization being in position, through necessity, of making recommendations, which procedure made certain rulings on questions covering which there was uncertainty and also outlined, in general, the principles we were following in the distribution. This procedure has been brought up to date and I purpose to distribute it to the organization this year in the same manner I did last.) Exhibit "1" attached is the form which this procedure now takes.

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I shall not attempt to lay before you all the calculations we will have to go through to get the desired result. I will simply confine myself to outlining the principles we are following. It must be understood, however, that the figures developed from these principles can only be used as a general guide - there must be more or less departure from same.

I will deal with the subject under the following headings:

I - DISTRIBUTION OF ALLOTMENTS

Having determined the amount available which is, according to the Plan, a matter with which the Finance Committee must deal, it is first necessary to divide this amount between the Corporation itself and its Operating Divisions and Subsidiaries. As yet we have been able to determine bit one way to do this, that being on the basis of eligible salaries. We therefore take the total amount of eligible salaries within the entire Corporation and allot to the Operations a proportion of the total fund based on the percentage their eligible salaries bears to the total salaries.

The next step is to divide the amount allotted to the Operations among them. In developing this we have taken the position as one factor that those Divisions contributing more generously to the stockholders in the way of earnings in proportion to capital employed should be entitled to a larger proportionate allotment. On this basis, and dealing with the 1923 distribution, the Buick Division distributed 3.57 times as much per dollar of eligible salaries, as the most poorly rated Operation and 1.36 times as much per dollar of eligible salaries as the average. While I fully recognize that it may take more ability, hard work, etc., to reduce what must necessarily be a loss than it may take to make an additional profit, in the final analysis, except under extraordinary circumstances, the measure must be that of profits. Expressed more concretely, distribution among the Operating Divisions is developed first by determining the capital employed at standard volume; next, by developing the relation of that capital to the total capital employed in all the Operations; then determining the percent earned on the capital employed for the year. The relation between the percent of the total capital and the amount each Operation has earned percentagewise, above or below the average return of all Operations, determines the percentage of the total allotment of all Operating Divisions to which each Operation so developed is entitled. Following this Plan, an Operation's allotment is in a way penalized as the amount of capital employed in it increases and the allotment is increased as the return on that capital increases, all in equal proportion.

Having divided the allotment to the Operations among them, the next step is to divide the several allotments for such Operations among their respective eligible members. To effect this, a letter is written to the General Manager of each Operation which letter states the total amount of allotment to which his Operation is entitled, as developed above. This letter also states the relation percentagewise between his

total allotment and the eligible salaries, which means, in other words, that if all members of his organization were treated on the basis of that established percent, applied to each eligible salary it would require the total allotment for that Operation. We assume, however, that those members of each organization who have contributed the most or in other words, the most important members are entitled to twice the average. Therefore, we advise each General Manager that he is permitted to give those members of his organization whom he considers have done the most constructive service twice the average and on the basis of that man or men being 100% allot correspondingly to the other eligibles. In no case, however, is the total allotment to be exceeded and in the event that following this procedure the total amount is exceeded all eligibles are to be reduced in the same proportion so that the total amount of the recommendations are within the alloted amount.

ALLOTMENTS WITHIN GENERAL MOTORS CORPORATION

As before stated, there being no profit or loss that can be used as a measure for the Corporation itself, such distribution is effected on the basis of an average distribution in direct proportion to the eligible salaries within any Staff or Activity so far as allotments to such Staffs or Activities are concerned, with the proviso that within each Staff or Activity, or whatever it may be, the most important men should receive twice the average allotment - the balance of the organization being measured on the basis of that man or men being 100% in the same manner as the Operating Divisions.

II - THE WORKOUT OF THE 1924 DISTRIBUTION FOLLOWING THE ABOVE PRINCIPLES

To give the Committee some idea of how this works out, I submit a few figures as follows:

(a) The eligible list in the Buick Division is entitled to a distribution on the average of approximately 31%; the Cadillac Division, 20%; Chevrolet Division, 13%; Oakland Division, 7½%; Olds Division, 13%, The average for the Car Group is approximately 18%. The corresponding figure for the Dayton Engineering Laboratories is 37%; for the Remy Electric Company 56%. These figures are higher than the Car and Truck Group on account, as before stated, of the increased earning capacity. The average for the Accessory Group is 23%, the average for the Inter-Company Parts Group is about 10%; for the Export Group, 13%; the average of all eligibles for all Operating Divisions is 18%.

(b) Giving weight to the participants in the Managers Securities Company who are ranked as 100%, Buick has the privilege of distributing to its eligibles an average of approximately 28% and to its key men approximately 50%. Other Divisions are in proportion - the average for all Divisions being 15% for the general list and approximately 30% for 100% men.

4441

The average distribution to eligibles within the Corporation itself is naturally the same as to eligibles in the Operating Divisions, namely, about 15% and twice that amount, or approximately 30%, to 100% men.

RELATIONS BETWEEN THE MANAGERS SECURITIES AND BONUS DISTRIBUTION

Mr. Brown and I established the principle last year that an eligible should be rated, from the standpoint of bonus allotment, following the principles herein outlined, independently of any equities that might flow to him as a stockholder in the Managers Securities Company. A comparison would then be made between the bonus allotment so established and his pro rata share of the amount General Motors pays to the Managers Securities Company. In the event that the former amount is larger than the latter he would, as to principle, be entitled to additional compensation in the form of a bonus allowance. I purpose to take up all such cases individually with the Manager of each Operation, and it may be possible that we will make some adjustments in order that all equities may be preserved. As a matter of fact it is only fair that we should do so because a participation in the Managers Securities was optional. Some took their full allotments, others took much less, still others took none at all and it does seem as if some adjustment, all within reasonable bounds, is necessary to be fair to all. On the other hand, it is a fact that in a number of cases the amount received as a stockholder of Managers Securities Company, being a pro rata proportion of the Class A surplus created during the current year flowing from the payment from General Motors, will exceed the amount that these particular persons would receive, assuming that the Managers Securities Company did not exist and following the principles herein outlined. Under such circumstances, manifestly, we cannot expect in such cases payments from the individuals to the Corporation. The balance between the amounts stockholders in the Managers Securities Company will receive as compared with what they would have received in the development of the Bonus Plan will result in a difference in favor of the participants in the Managers Securities Company. This means, expressed otherwise, that the allotments are too large or the corresponding salaries are too small. I will deal with these cases, as before stated, individually and will do the best I can to preserve all the equities in the premises.

Respectfully submitted,

APSJr/k

Alfred P. Sloan, Jr.

6642

GENERAL MOTORS CORPORATION

---------oOo----------

Program Dealing With Bonus Allotment For The Year 1924

---------oOo----------

October 22, 1924.

EXHIBIT "I"

PROGRAM DEALING WITH BONUS ALLOTMENT FOR THE YEAR 1924.

In view of the fact that the Corporation's bonus plan provides, on the basis of a normal year, for the distribution of what is a very large sum of money necessitated, of course, by the magnitude of the Corporation's activities, it is important that we all exert every effort toward having this distribution on as equitable a basis as possible to the end that in administrating the plan the spirit and the fundamentals of same be complied with and particularly that a common understanding be developed among all those handling the matter. For that reason I have prepared this plan hoping it will be of some assistance to those chargedwith responsibility in the matter.

PRESENT PLAN

The original plan after being held in abeyance during 1921, a year of general adjustment, was reinstated and made effective, with certain changes adopted at that time, for the year 1922. There having been no amendments over the 1922 plan that stands as our guide in distributing the 1924 allotment. In view of the fact that considerable time has elapsed since this matter was last dealt with, it is recommended that the plan as officially adopted be again carefully read over at this time. A copy of same is attached for ready reference as Exhibit "A".

TWO CLASSES OF BONUSES

As will be noted from the plan itself, we are dealing with two classes of bonuses as follows:

(a) Special Service Bonuses: Such bonuses are awarded to employes for inventions, suggestions, ideas or improvements of special value to the Corporation entirely irrespective of the earnings of the Corporation or of the earnings or length of service of an employe. Each case is to be determined solely on its merits and in accordance with the judgment and decision of the Finance Committee. This class of bonus may also be awarded for extraordinary service.

(b) Conspicuous Service Bonuses: These bonuses cover awards for conspicuous contributions to the general success of the Corporation.

Dealing with awards under class "(a)", attention is called to the fact that very few, if any, awards have been made under this particular type of bonus, either during the last two years or the previous years during which the same class of bonus was included in the plan but under a somewhat different title. I personally believe that this special service bonus can be employed in a very broad way to the interest of both our employes and the Corporation

but I feel, in the absence of any development of the plan, that it will be somewhat difficult to deal with it in the way we should and I believe ultimately will. However, any recommendations made in this regard will, of course, be given proper consideration.

In recommending awards under class "(b)", success attained, initiative, hard and conscientious work, willingness to serve and to co-operate and interest in the Corporation's affairs are all important factors that must be properly judged and weighed. As a matter of fact, this class of bonus calls for consideration of the merit of each individual and it follows that awards will differ in amount and will not necessarily be proportioned to salaries. It will also be noted that under no circumstances are bonuses to be considered or awarded in place of salary increases. It is the policy of the Corporation to pay salaries in proportion to each individual's services, judging same at the market value, so to speak - the amounts to be entirely divorced from any bonus that may or may not be awarded. Furthermore, the plan is not in any sense intended as a profit sharing one although the allotment is predicated upon earnings.

WHAT EMPLOYES ARE ELIGIBLE

The plan provides that the eligible candidates for participation in the bonus shall be prepared from a list of employes qualifying as follows:

(a) Those having an annual salary of $5,000.00 or more as of December 31st, 1924, provided they were in the employ of the Corporation on January 1st, 1924, and have remained in such employ for the full twelve months of 1924.

(b) Exceptions to "(a)", as to length of service, if authorized by the President.

(c) Exceptions to "(a)", as to salary, when recommended by the President and approved by the Finance Committee.

Dealing with the above, your attention is called to the fact that the salary limitation must be interpreted in a liberal manner. I will, therefore, in making my recommendations to the Finance Committee, consider that any employe receiving a salry of $400.00 a month is on a parity with one receiving $5,000.00 a year for the purpose of this consideration and all without prejudice. This is necessary because some Divisions have the practice of considering $4,800.00 as essentially a salary of $5,000.00. In addition to the above point it has been found that the cost of living in different places in which the Corporation's activities are being conducted, very properly influences the rates of salaries. Therefore, it might even come about that an employe receiving as low as $4,000.00 in certain places would rank in the service of that particular Division as high as an employe in another Division in some other locality who is receiving the stipulated amount. It is somewhat difficult

to clearly define just what should govern in this regard, but it should be recognized that the spirit of the plan is to include in the bonus distribution the most important employes of the Corporation and it is considered that the only practical way to define that was through a salary limitation. Stating the situation more specifically, the following principles will govern:

(1) A monthly salary of $400.00 will be considered as equivalent to $5,000.00 a year.

(2) An employe receiving a salary from $4,000.00 to $4,800.00 per year will be considered but only in the event -

That the rate of salaries of the Division by which he is employed is such that the amount of his salary can be properly considered as the equivalent in that particular place of the stipulated salary.

(3) No consideration whatsoever can possibly be given to any employe receiving a yearly salary of less than $4,000.00.

(4) Thru necessity in developing allotments, salaries in effect as of November 1st, 1924, will be used for the purpose of computation.

(5) Under no circumstances will consideration be given to employes who were not in the service of the Corporation on January 1, 1924.

(6) If recommendations are made for employes, otherwise eligible, who do not remain in the service of the Corporation for the full 12 months of 1924, it will be incumbent upon the General Managers, in the case of Divisions and Subsidiaries, and upon the heads of Staffs, in the case of the Corporation itself, to withdraw such recommendations.

HOW RECOMMENDATIONS ARE TO BE SUBMITTED

In order that careful treatment may be accorded the subject and comprehensive records established for the use of the Finance Committee, relevent data will be assembled on forms, a specimen copy of which is attached as a part of this Procedure, and marked Exhibit "B". Such forms will be delivered in conjunction with this program to the General Manager of each Division and Subsidiary, and to the head of each Staff or Department within the General Motors organization itself, covering respectively the employes under the jurisdiction of such individuals. On these forms when so delivered, there will appear the names of eligible participants so far as the records of the Salary Committee permit, and this interpretation of the plan provides. These forms will also show among other things, the official bonus allotments awarded by the Corporation during prior years.

It will be the duty of those individuals receiving these forms as above indicated, to complete all other data required on them before they are returned to the office of the President of the Corporation. Item 16 of the form must be endorsed by the individual having direct supervision. Item 17 is to be signed by the General Manager of the Division or of the Subsidiary in the case of Operating Units, and respectively by the heads of Staffs in the case of the Corporation itself. This means, in the latter case, that the heads of Departments within the Financial Staff, or the heads of Sections or of Departments within the cooperative Staff or the General Service Staff, should confer with the head of each respective Staff in connection with recommendations.

These forms are intended merely as a guide in assisting the development of recommendations. It is probable that employes are eligible whose names do not appear on the delivered forms. On the contrary, forms may be provided specifying employes who may not be recommended. The reason for this is that certain Divisions or Subsidiaries, and certain Departments of the Corporation itself, may not have kept an accurate and complete record of the previous years' awards, or have furnished the Salary Committee, under its arrangement with the organization, the latest up-to-date salary information. All this, however, is within the jurisdiction of each Member of the Organization charged with responsibility in the making of recommendations.

Blank forms will also be included with the partially filled-in ones, for the purpose of submitting additional recommendations or for any other purpose that necessity may require.

DIVISIONAL AND GENERAL ALLOTMENTS

The Corporation's Bonus Plan provides that the total amount to be distributed shall be determined by the Finance Committee but shall not exceed ten per cent (10%) of the net earnings of the Corporation after seven per cent (7%) of the employed capital is deducted therefrom. It naturally follows from the above that the amount distributed is altered as the earnings of the Corporation increase or decrease. Due to the fact that earnings thus applicable for bonus purposes, for the year 1924, according to the latest forecast, will be but Forty per cent(40 %) of those for the year 1923, allotments must be adjusted in accordance with such reduction. Your attention is called to this fact in order that there may be no misunderstanding. Assuming that the total amount to be distributed has been established the next problem is an equitable distribution - first, between the Divisions and the General Staff of the Corporation itself; second, between the Operating Units, and third, within each Operating Unit. It is most important that these distributions be made equitably and in view of the fact that the responsibility of the undersigned in this regard is very great I am most anxious to have a clear understanding in order that all the equities may be preserved.

Approaching the matter from the above standpoint, I FEEL THAT THE ALLOTMENT OF EACH OPERATING ORGANIZATION SHOULD BE INFLUENCED IN AMOUNT BY ANY EXCEPTIONALLY GOOD RESULT THAT OPERATION HAS BEEN ABLE TO OBTAIN ECONOMICALLY MEASURED IN THE LIGHT OF LARGE COMPARATIVE EARNINGS, OF ACCOMPLISHMENT IN PROTECTING AGAINST LARGE POTENTIAL LOSSES OR OF ANY OUTSTANDING ACHIEVEMENT. In view of the fact that the return on the capital employed is the established method within the Corporation, all other things being equal, of determining the relative effectiveness of our different Operations, considerable weight has been given to this factor. It is further recognized that no arbitrary rules can be laid down in this regard. There must be exceptions because it sometimes happens that an organization has been assigned a task handicapped by conditions absolutely beyond its control. In such cases, therefore, an excellent record may have been established, yet a satisfactory return not accomplished.

In addition to the relative return on the capital employed and the eligible salary list, the capital itself must be given some consideration. I have given a great deal of thought to all these factors and have finally reduced them to a definite and carefully developed basis which seems to afford an excellent way of distributing the total allotment into the Operating Divisions. Although modifications in certain places have been necessary, in general I am absolutely following a definite method of allotment. As a result it will follow that the allotment to each Division or Subsidiary in relation to the eligible salary within that Division or Subsidiary will differ materially but will, in the main, be most largely influenced by the varying return on the capital employed. Expressing the above in definite figures the relation which the total bonus allotment bears to the total eligible salaries within Divisions and Subsidiaries varies from 7½% to 56%, depending upon the standing of each Division or Subsidiary. The relation between the allotments of the Operating Units as a total and the total bonus allotment or, in other words, the specific allotment for the General Staff of the Corporation itself can only be made on one basis; i.e., upon the exact relation of the eligible payroll.

Those charged respectively with the responsibility of recommendations will receive with this procedure a letter in which the total allotment for that particular jurisdiction is specified, this allotment having been developed in accordance with the above.

ON WHAT BASIS ARE INDIVIDUAL RECOMMENDATIONS TO BE DEVELOPED

I have likewise given considerable thought to the manner in which recommendations should be made within each Division and although such recommendations are entirely within the province of each General Manager, it is important that we should have a few general rules in order that an equitable distribution may be obtained. As a matter of fact, from our experience during previous years we naturally found that some Divisions were more liberal in their distribution than others and while we wish to be as liberal as the limit of the

total bonus fund makes possible, nevertheless it is exceedingly important that a proper relationship be established within each Division and that this relationship be suitably co-related among the several Divisions, otherwise dissatisfaction results and what is believed to be a constructive and helpful plan may, to a certain degree, develop into an actual liability.

In view of the above and after a careful analysis of all the statistics available, I recommend that having developed a list of eligible candidates, eliminating those who should be eliminated according to the policy of the plan, that the next step should be to determine among all those candidates the one who has performed the most conspicuous service. It is possible there might be more than one such candidate in which event that factor should be recognized. In the letter accompanying this Procedure will be stated a percentage of salary that may be awarded in the discretion of the General Manager as a maximum to those eligibles standing, so to speak, at the head of the list. This should be adopted as a standard and the total allotment distributed to the balance of the eligible list on the basis of this particular standard as 100%. In the event it should develop that the total allotment is in excess of the amount required, then the balance should not be used. If the total allotment is exceeded the entire list should be carefully reviewed and the allotments reduced pro rata. This is necessary because the total allotment can not be exceeded except under extraordinary circumstances of an extreme nature for the reason it is made on a comparative basis with all factors carefully weighed and it would not be fair to the other Divisions and Subsidiaries to increase the allotment of any particular Division.

DEALING WITH CERTAIN SPECIFIC RECOMMENDATIONS

The allotments referred to in this program and definitely specified for each Operation or Activity in the letter accompanying same all as specified on the Corporation's Organization Chart effective as of November 1st, 1924, do not include allowances for the following:

(a) Chief Executive Officers of Operating Divisions and Subsidiaries including General Motors Building, Acceptance and Exchange Corporations;

(b) Heads of Cooperative, General Service, Operating, Financial and Legal Staffs, also Officers designated as Group Executives.

(c) Heads of Departments within Financial Staff and Heads of Sections of Cooperative and of General Service Staffs.

(d) Employes who are participating in the Managers Securities Corporation whether included or not in "(a)", "(b)" and "(c)" above.

Awards covering those designated above will be made directly by the Finance Committee.

NOTICE OF ALLOTMENT

In dealing with the 1923 distribution, the undersigned as President of the Corporation, issued a letter to each individual receiving an allotment stating that according to the provisions of the bonus plan an award had been made of a certain number of shares of the Common stock of the Corporation and further stating that a certificate for one-fourth of the award would be delivered early in the following year but that certificates for the balance would be held for his individual account as provided for by the bonus plan. The mailing of this notice of award was timed and it is planned will also be so timed this year that it will be received at the home address of each individual on Christmas Eve. A sample copy of the notice of allotment letter as sent by the General Motors Corporation to participants in the 1923 bonus class is attached as Exhibit "C".

Careful consideration has been given to the particular form of these notices of allotment and it has been considered preferable that same be made in the name of General Motors Corporation. Those having jurisdiction, however, will state in returning bonus recommendations, the following:

(a) Is it preferred that the allotment notice be mailed directly to the residence of each recipient to arrive on Christman Eve.

or

(b) Should the notices be sent to the head of each Operation or Staff or other Activity, whatever it may be called for personal distribution on December 24th?

MODIFICATION OF TOTAL ALLOTMENTS

The total allotments for each jurisdiction referred to in this procedure are the best estimates available, all things considered, at the present time and are predicated upon recommendations which will be made to the Finance Committee in accordance with the provisions of the bonus plan. The total amount can only be determined by the Finance Committee. Therefore, any adjustments either way will be made on a pro-rata basis which means that the principles herein outlined so far as inter-divisional distribution and distribution within each Division, will be maintained.

CONFERENCE REGARDING BONUS RECOMMENDATIONS

In view of the fact that the responsibility of bonus recommendations is lodged with the President of the General Motors Corporation and in order to be sure that a common understanding is reached inter-divisionally and proper

equities preserved, I will meet the General Manager of each Division or Subsidiary and the head of each Staff having jurisdiction, at a date to be later determined, at which time the bonus recommendations may be presented and analyzed preparatory to submitting definite recommendations to the Finance Committee for approval or modification as its judgment may dictate.

Alfred P. Sloan, Jr.
President
General Motors Corporation.

E. M. 400 1500 2-34
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GENERAL MOTORS CORPORATION

BONUS RECOMMENDATION FOR YEAR 1934

1. NAME OF EMPLOYE (IN FULL)

2. BUSINESS ADDRESS

3. HOME ADDRESS

4. NAME OF DIVISION, SUBSIDIARY OR CENTRAL OFFICE

5. EMPLOYE'S CURRENT POSITION

6. PRESENT MONTHLY SALARY $

7. STATE CONCISELY EMPLOYE'S DUTIES IN PRESENT POSITION

8. STATE TOTAL LENGTH OF EMPLOYMENT WITH CORPORATION

9. FURNISH AS BELOW INDICATED RECORD OF SERVICE WITH CORPORATION WITHIN LAST THREE YEARS

(Unit filling in form will give complete data including employe's History with other units, if any)

POSITIONS	INCLUSIVE DATES OF SERVICE IN POSITIONS	EMPLOYER (DIVISION SUBSIDIARY OR CENTRAL OFFICE)	SALARY CHANGES (MONTHLY BASIS) DATES	FROM	TO
				$	$

10. BONUS HISTORY WITH CORPORATION:

YEAR	NUMBER OF SHARES AWARDED	SALARY ON DATE OF AWARD
1918		
1919		
1920		
1922		
1923		

11. BONUS RECOMMENDED FOR 1934 $ FOR

(Repeat employe's name here for ready reference)

EXHIBIT "B"

4452

12. **STATE REASONS FOR RECOMMENDATION IN DETAIL:**

(In so doing give utmost consideration to key point that exceptional ability and meritorious service, irrespective of importance of position, should provide basis for recommendation. Outline particularly responsibility of duties, nature of exceptional ability and type of service rendered).

I CERTIFY THAT THE ABOVE IS CORRECT, ACCORDING TO MY BEST JUDGMENT AND BASED ON MY PERSONAL KNOWLEDGE OF AND ACQUAINTANCE WITH THE DUTIES PERFORMED FOR THE CORPORATION BY THE EMPLOYE HEREIN NAMED.

SIGNED BY

(TITLE)

(The above statement is to be made by the individual directly supervising the employe.)

13. **COMMENTS OF GENERAL MANAGER OF UNIT OR HEAD OF CENTRAL OFFICE STAFF:**

WE CERTIFY THAT AFTER CAREFUL CONSIDERATION OF THIS RECOMMENDATION, WE HEREWITH GIVE OUR APPROVAL.

APPROVED BY:

PRESIDENT

SIGNED BY:

GENERAL MANAGER OF UNIT OR STAFF HEAD

14. **BONUS AWARDED**

NO. OF SHARES

SIGNED BY:

SECRETARY OF FINANCE COMMITTEE

6656

GENERAL MOTORS CORPORATION

224 WEST 57TH STREET
NEW YORK, N.Y.

CABLE ADDRESS
GENMOT
NEW YORK

The General Motors Corporation Bonus Plan provides for a yearly distribution of common stock to those members of the organization who have contributed to its success in a conspicuous manner.

Individual awards vary with three factors: first, the contribution of each individual as judged by his ability, initiative and willingness to cooperate to the good of the general cause; second, the success of the particular Operation to which each individual is assigned as measured by the contribution of that Operation to the earnings of the Corporation, this factor being tempered where special circumstances exist and third, the success of the Corporation as a whole.

I am pleased to inform that upon the recommendation of the management of your Division which recommendation has been duly approved by the Finance Committee of the Corporation, you have been awarded a conspicuous service bonus for the year 1923 consisting of

shares Common stock General Motors Corporation.

A certificate for one-quarter of this award will be delivered to you as soon as possible after the first of February and the remainder will be held for your account.

I am glad to have this opportunity of thanking you as a member of our organization for the splendid result of the year's work to which your contribution has been an important one. I am sure that this is going to be continued in even a more effective way throughout next year and for many years thereafter.

With the Compliments of the Season, I remain,

Very truly yours,

President,
GENERAL MOTORS CORPORATION

1454

Defendant's Exhibit (GM) No. 32

6637

October 21, 1924.

Sir Harry McGowan,
Nobel House,
Buckingham Gate,
London, S.W.1, England.

Dear Sir Harry:

As you doubtless remember, we have been negotiating with the Messrs. Fisher for a number of months for the purpose of arriving at a plan, satisfactory to both sides, by which the Fisher brothers would continue with General Motors interests. The contract which expired October 1 provided that they should receive a percentage of Fisher Body earnings, distributed among the brothers in a specific manner. This contract which had run five years netted the Fisher brothers about $7,500,000. The first offer made to them was that we should give them a contract based on ownership of shares in the Managers Securities Company, which as you remember was formed to interest the principal men of General Motors Corporation, and make the number of these shares sufficient to net the Fisher brothers approximately $7,000,000 during the seven years that the Managers Securities contract runs. On examination this showed that the Fisher brothers would not be allotted as much stock in the Managers Securities Company as men in similar positions with General Motors Corporation. We therefore changed the basis of figuring and offered them a number of shares in Managers Securities Company as nearly as possible equivalent to those allotted men of similar positions in General Motors Corporation,

4455

but as two-sevenths of the Managers Securities contract period has already expired, we reduced the Fisher allotments by two-sevenths, i.e. allotted them five-sevenths of the first determined amount. This proved satisfactory to them and an agreement was made. In turn, Messrs. Fred and Lawrence Fisher agreed to sever their connection with the Fisher Body Corporation and become members of the General Motors executive committee, for the purpose of acquainting themselves thoroughly with General Motors operations and difficulties, without any allotment of specific duties. This I believe is a step forward. As it has not been possible for Alfred Sloan to give personal attention to all of the ramifications of the Corporation, I think the Messrs. Fisher are especially well adapted to assist him in ferreting out troubles promptly and applying remedies. I think heretofore we have been slow in the former particular and a bit lax in the latter. Interesting two members of the Fisher family directly in General Motors will have a very beneficial effect in breaking up a line of separation of the two companies' interests that has not been altogether wholesome. From lack of knowledge, the two sides have tended to criticise each other, without good result. Hereafter the Fishers will better understand General Motors problems and difficulties and, I think, General Motors men will better appreciate the Fisher problems.

Mr. William A. Fisher will become President of Fisher Body Corporation. Mr. Charles Fisher, who also joins General Motors executive committee, will spend most of his time in guiding the Fisher interests. Messrs. Edward and Alfred Fisher will remain in their important executive positions in the Fisher Body Corporation.

4456

We all feel that the settlement of this business will prove very beneficial. Messrs. Fisher are very happy over the solution of the problem, as for some time they have been fearful lest failure to get together would necessitate the breaking up of relations, perhaps a break in the Fisher family, concerning which they naturally have great pride, as they have been phenomenally successful in the cleanest kind of a business enterprise.

I hope that you will be interested in and approve all of the steps. Negotiation was long but its conclusion worked out very quickly. Even on October 1 when the old contract ran out it looked as though we would not be able to get together.

Sincerely yours,

Chairman.

Enclosure.

E

Defendant's Exhibit (GM) No. 33

Telegrams: Nobolind Soarest London
Telephone: Victoria 9650

Nobel House
Buckingham Gate
London S.W.1

7th November 1924

6660

My dear Pierre,

I have your letter of 21st ultimo, which I have read with very great interest indeed, and I congratulate you and your associates on being able to arrange such a contract as to bring the Fisher boys into more active participation in the activities of the General Motors Corporation. I am sure this is all to the good, as it has been obvious to me on my recent visits that Alfred Sloan is somewhat over-burdened: in addition, it cements the relationship for all time with the Fisher Corporation, to which we all attach great importance.

I have had the pleasure of seeing Kettering and McEvoy here, and I think we have been able to help in their mission.

With kindest regards,

Yours very truly,

Pierre duPont, Esq.

NEW YORK.

4458

G.M. 47 E

Defendant's Exhibit (GM) No. 34

GENERAL MOTORS CORPORATION

INTER-ORGANIZATION LETTERS ONLY 6661

SUBJECT

February 13, 1926.

FROM

FOR ATTENTION OF Mr. J. J. Raskob

Strictly Confidential

I do not know whether I am butting in or not, but the time has come when the future developments of our plan and the protection of our competitive position requires that we make the most determined effort possible to work out Fisher Body situation along more constructive lines to the end that proper co-ordination can be effected. This is not only the development of the lumber situation which perhaps could be handled in some other way, but relates more intimately to general operating phases of our activities. In my judgment we will very soon reach the point where we are absolutely blocked on certain important things; in fact, we are in that position in one instance today, as I think you recognize.

I appreciate just how you feel about the matter and how Don feels about the matter; viz., the market being as it is, nothing can be done. However, perhaps by stirring the matter up something can yet be done even if it is a compromise, as most things in this world are anyway.

For all the above reasons I have discussed it with you, with Don, with Fred and with Mr. P.S. in the hopes of setting the minds of all of us more actively at work on the question. Fred's whole attitude is so enthusiastically for General Motors, its present position and its future, that of course it makes it very much easier to deal with the problem than ever before. He has, in every sense of the word, become one of us. I do not mean to infer that he is going to take any position other than a thoroughly constructive one from the other standpoint, but the approach of his mind to the problem has a great deal to do with working out something that will be satisfactory.

I had a long talk with Fred about it in Detroit this week and spent quite a good deal of time analyzing it myself so that I would know something about it. I agree with your contentions and Don's contentions absolutely - that the present basis is something like one-half to one and I recognize, as you do, that that is so entirely out of harmony with the market situation as to make it unpresentable. I have approached it, however, from the standpoint - - is some sort of a compromise not possible and if there is, even if it is out of harmony with the market situation are we sure enough to go through with it, recognizing that

4459

any consolidation under the New York laws which control this picture, may be challenged through an appraisal being asked by a dissenting stockholder? I believe that we have every reason to feel that an appraisal would give little regard to the market position but would give very complete regard to the equities, therefore, if we are proper on the equities there should be no difficulty.

I urged upon Fred a definite expression of opinion on one point and that is - assuming that the book value harmonized and the earnings of the two respective corporations harmonized in the exchange, would he insist that the market be harmonized to the fullest extent? His attitude on this one way or the other might indicate something. He telephoned me that he has given the matter some thought and that Mr. Bitting would come on and discuss the matter with Mr. P.S. and yourself, of course. I have reported this to Mr. P.S. and this will be the means of advising you as a conference on the subject will take place this coming week.

I want to say to you, as I have said to Mr. P.S. -- I am absolutely against making a deal other than on the basis of looking forward rather than backward. I feel as we go on our position becomes strengthened, but irrespective of our shortcomings in the past, which of course affects our present market situation to some extent, it has nothing to do with the future and this perhaps deals with the future to a very material degree. Irrespective of all this, of course I recognize the market position in a thing of this kind necessitates some sort of a compromise.

Whatever Fred may have in mind, of course I do not know, but I fear that he will feel that the market should be equalized to its full present relation. If that is insisted upon, I do not think we should go ahead and that is the reason why I feel that that is the vital point on which his position should be determined.

There is another thing that I do not agree with and that is - I do not think it is fair to set up the savings accruing to us on the 40% that we will get without taking into consideration the cost of those savings on the basis of 100% of Fisher Body. Fred has in mind taking 40%. I think that General Motors as a stockholder is entitled to as much consideration as any other stockholder and that we can not ignore our proportion of the total.

I hope in the discussion that you will see fit to ask John Pratt to enter same. He has some information and a viewpoint in the matter which I am sure will be helpful. Mr. John Thomas Smith has some ideas which I think should be brought into the picture, and in view of the fact that I am going away, I am reporting the status of the above to you. Understand, I have approached this with the rather forlorn hope that something might be accomplished. We should make a desperate effort to do this, all with regard, of course, to the cost of accomplishing same.

Alfred P. Sloan Jr

4460

APSJr./K

Defendant's Exhibit (GM) No. 35

6663

GENERAL MOTORS CORPORATION
COMPARISON OF NUMBER AND PROPORTION OF MOTOR VEHICLES (PASSENGER AND TRUCK) SOLD BY FORD, GENERAL MOTORS, AND OTHER MANUFACTURERS, 1921

	Total Number of Motor Vehicles Sold by All Manufacturers (1)	Percent to Total
Ford Motor Co.	933,720	55.45
Buick	80,122	4.77
Cadillac	11,130	.66
Chevrolet	68,080	4.04
Oakland	11,852	.70
Oldsmobile	18,978	1.13
General Motors - Miscellaneous	8,359 (2)	.49
GMC Truck	2,760)	
Samson Trucks	747)	
Scripps-Booth	3,056)	.49
Sheridan	1,796)	
General Motors Total	198,487 (3)	11.79
All Other	551,709	32.76
Total - All	1,683,916	100.00

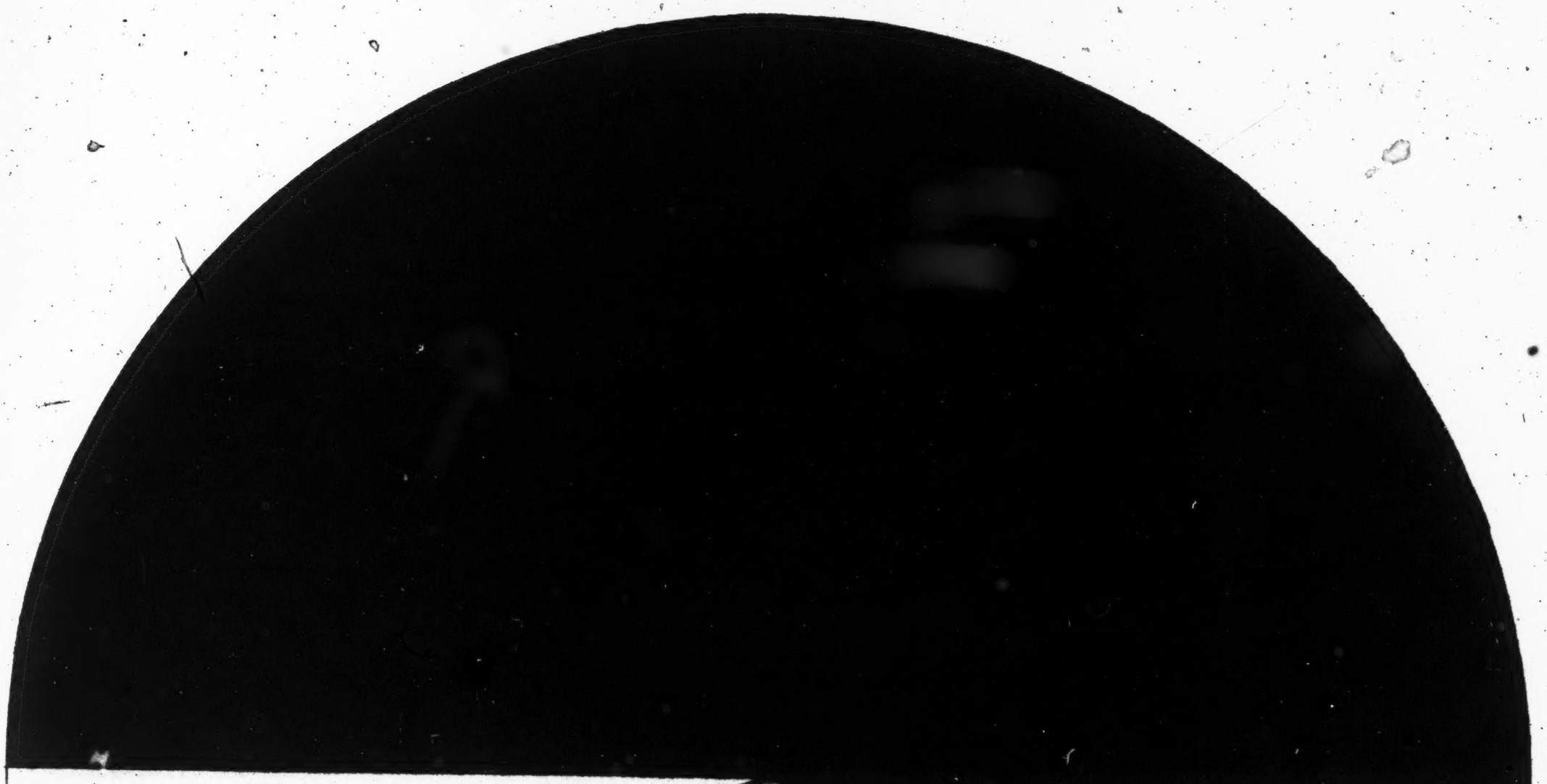
(1) Source: Federal Trade Commission "Report on Motor Vehicle Industry" pursuant to Joint Resolution No. 87 (H.J.Res. 594) Seventy-fifth Congress Third Session - Page 27, Table 7.

(2) Includes 34 units not included in Federal Trade Commission's Total for General Motors.

(3) Source: General Motors Corporation's "Historical Record - Vehicles Sold"

Defendant's Exhibit (GM) No. 36

GENERAL MOTORS VS. FORD
PER CENT OF INDUSTRY VEHICLE SALES
FOR THE YEAR 1921



Defendant's Exhibit (GM) No. 37

6665

1 M 1

GENERAL MOTORS COMPANY
MEETING OF PURCHASING AGENTS

May 7, 1913

• • •

CLERK meeting of the Purchasing Agents of the companies subsidiary to General Motors Company was held at the office of said Company in Detroit on May 7th, 1913.

Present:

C. W. Nash	
H. L. Barton	
H. C. Chandler	
E. J. Copeland	representing Buick Motor Company
J. H. Main	" Cadillac Motor Car Company
A. A. Lehr	" Cartercar Company
J. A. Murray	" General Motors Truck Company
J. S. O'Rourke	" Jackson-Church-Wilcox Co.
F. A. Cowen	" Michigan Motor Cstgs. Co.
L. M. Payne	" Northway Motor & Mfg. Co.
H. R. Viot	" Oakland Motor Car Company
C. O. Miller	" Olds Motor Works
W. N. Edson	" Weston-Mott Company.

Mr. Nash presided; Mr. Merrill recorded.

Mr. Nash stated that he had called the meeting with a view to giving the Purchasing Agents an opportunity to become better acquainted and to discuss topics of common interest relating to their branch of the work.

In the course of his remarks Mr. Nash summarized the financial situation, calling particular attention to the imperative necessity for keeping the payments to be made

prior to July 31st at a minimum in order that the Company might show a clean sheet at the close of its fiscal year. In furtherance of this plan as many orders as possible for delivery during June and July are to be dated so as to make the payments fall due after August 1st. Further than this, such orders are to be kept at a minimum so as to make the payments falling due in August as small as possible. It is realized that it will be especially difficult for the parts companies, such as the Northway, Weston-Mott, and Jackson-Church-Wilcox, to conform to this plan and still be in position to make deliveries to the constituent companies in July, but it is of the utmost importance that the plan should be rigidly adhered to in order that the Company may have its indebtedness paid off by the end of the year. The accomplishment of this purpose being dependent, almost entirely, upon the efforts and co-operation of the Purchasing Agents, Mr. Nash requested each and every one of them to do his utmost to make the plan a success.

1 M 2

In response to an inquiry regarding the form of Buick contracts, Mr. Copeland stated that as a rule said contracts are drawn to cover the requirements of the Company not to exceed a stated amount, in other words, the contracts specify a maximum but not a minimum amount so that the Company is obligated only for orders actually placed. The contracts are drawn so as to give the Company the benefit of any general reduction of prices or more favorable quotations from others. In certain of the contracts a provision is inserted making them available for any subsidiary company of General Motors Company. It is the intention to use such a provision in practically all of the 1914 contracts and the other companies will be duly advised regarding all such contracts.

2

As a result of the discussion which followed it was decided that much good could be accomplished by an exchange of contract forms between the various companies. In pursuance of this plan each Purchasing Agent is to send the others a copy of the contract form which he is now using.

Mr. Zimmerschied appeared before the meeting and made a statement regarding the Low Chrome Steel situation as developed by investigation of the matter recently made by Mr. Bassett and himself at the direction of the Board of Managers.

A question was raised as to whether transportation charges upon purchases made from the surplus stock lists furnished by the various companies should be paid by the selling or the buying company. It was decided that all such purchases should be f.o.b. the selling company inasmuch as practically all sales are made in that way and any departure from the usual procedure would tend to complicate the accounting and confuse matters.

The remainder of the session was devoted to informal discussion and conversation regarding various phases of the work.

The meeting thereupon adjourned.

T. S. MERRILL,
Secretary.

Defendant's Exhibit (GM) No. 38

6668

2 M 1

GENERAL MOTORS COMPANY
MEETING OF PURCHASING AGENTS

June 4, 1913

• • • •

Meeting held at offices of General Motors Company in Detroit at 1:30 P M.

Present:

Messrs. H. C. Chandler
E. J. Copeland
J. A. Murray
J. S. O'Rourke
F. A. Cowen
L. M. Payne
H. R. Viot
C. O. Miller
W. N. Edson

Mr. Copeland presided; Mr. Merrill recorded.

STANDARDIZATION OF CONTRACT AND INQUIRY FORMS—Consideration of this matter was deferred to the next meeting because of the absence of Mr. Main, one of the committee having it in charge.

PRODUCTION MATERIAL AND SUPPLIES—Various items were considered and notes regarding same compared and discussed, including the following, viz: keys, malleables, sheet steel, electric lamps, castellated nuts, plain nuts, cap screws, set screws, carriage bolts, machine bolts, taper pins, lock washers, rubber tires, cutting compounds, hair, wood screws and top material.

4465

NOVELTY LAMPS—Mr. Copeland advised that the Buick Company had decided to use in their automobile lamps, bulbs manufactured by the Novelty Incandescent Lamp Company of Emporium, Penna., a subsidiary of General Motors, provided an understanding is reached regarding prices. The Buick's estimated requirements are 150,000 and the price 60% off list. The Buick Company is also testing Novelty lamps for industrial purposes.

MYSTIC CUTTING COMPOUND—It was decided that a general contract, available for all of the companies, should be made covering this compound. Each member of the Board is to ascertain the amount of said compound used by his Company and report the same at the next meeting in order that the aggregate requirements may be determined to serve as a basis for such a contract.

SEALING IRON—Mr. Murray inquired as to the make and type of the sealing iron used at the Oakland plant in stamping numbers upon its cars. According to his understanding, the iron

used at said plant is particularly efficient and he desired to know more about it. Mr. Viot will obtain full information regarding the matter and advise the other purchasing agents.

PREST-O-LITE TANKS—It developed that the Truck Company and the Olds and Cartercar companies have a surplus stock of these tanks. Mr. Copeland stated that the Buick is now negotiating for its 1914 requirements and is therefore in a position to make satisfactory arrangements for the return of unused tanks. Any company having tanks

on hand which it desires to dispose of should furnish Mr. Copeland with full particulars regarding same at once.

LISTS OF SURPLUS STOCK—Attention was called to the fact that all of the companies are not sending their lists of surplus stocks to the other companies regularly each month as planned. Each member of the Board is to exert every effort to see that these lists are sent out regularly and promptly and also to see that a copy of each list is sent to Mr. Nash, c/o General Motors Company, Detroit.

DISBURSEMENTS—Attention was again called to the necessity for keeping the disbursements during the remainder of the fiscal year and for the month of August as small as possible. It appeared that each member of the Board is doing his utmost along those lines.

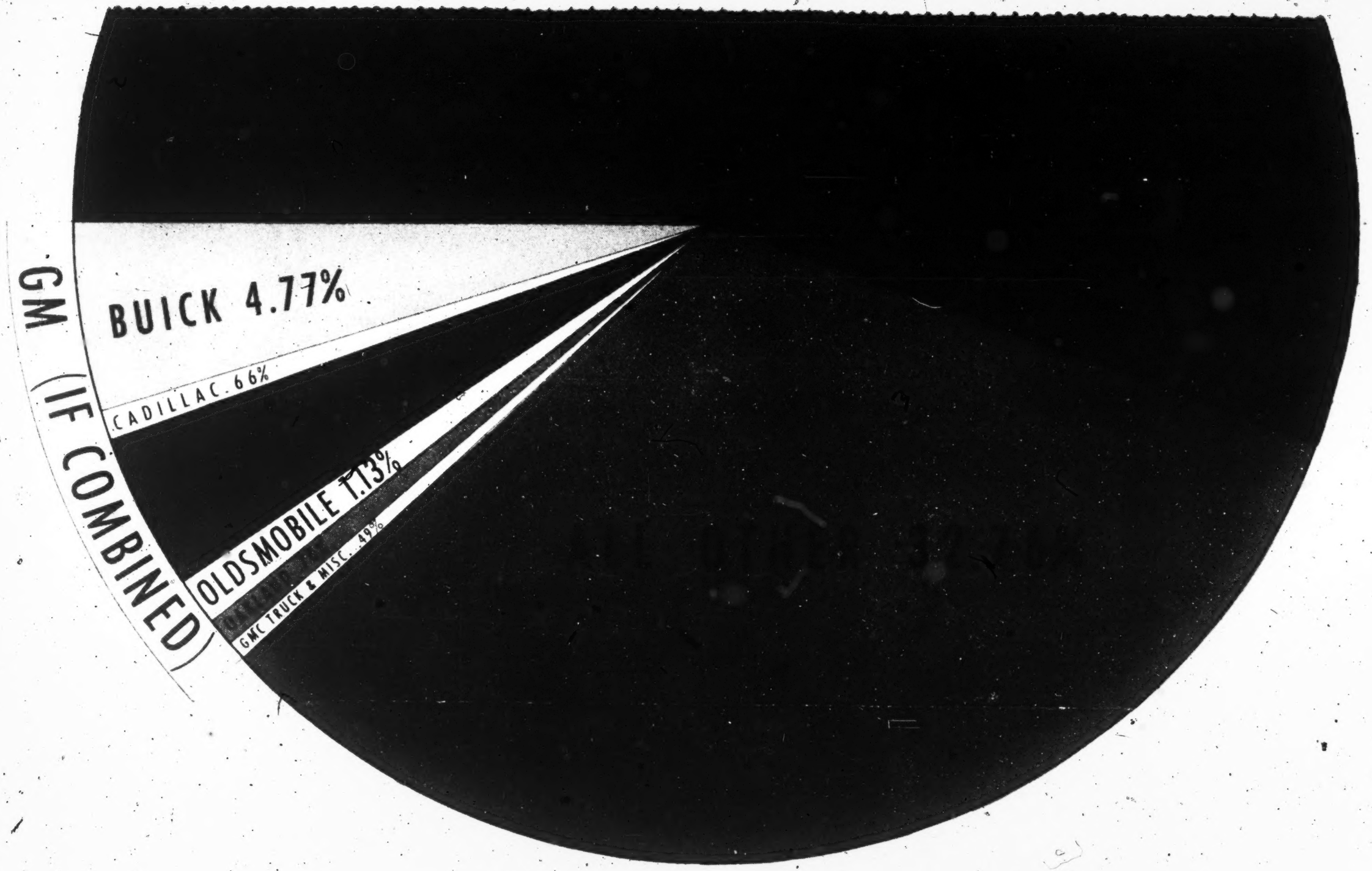
CHANGES IN DESIGN—Reference was made to the expense to which the companies are sometimes put by reason of changes in design. It was agreed that the purchasing agents could render their respective companies valuable service and effect a large saving by closely scrutinizing all contemplated changes of this nature and seeing that the Engineering Department or the Manager is fully advised as to the aggregate cost of same in dollars and cents, also that all specifications for materials should likewise be given careful study with a view to possible modifications by which money might be saved.

COMPILATION OF DATA—In order that the data regarding prices, etc., obtained by the various members of the Board might be brought together and combined in comparative statements so as to be of maximum usefulness to each member it was decided that any member desiring in-

formation concerning any item should so advise the Chairman of the Board (Mr. Copeland) who will thereupon have this data gathered and compiled, furnishing a copy of the statement to each member of the Board.

No further business being presented, the meeting adjourned.

T. S. Merrill
Secretary


GM (IF COMBINED)
BUICK 4.77%
CADILLAC .66%
OLDSMOBILE 1.13%
GMC TRUCK & MISC. .49%

Defendant's Exhibit (GM) No. 39

6672

4 M 1

GENERAL MOTORS COMPANY

MEETING OF PURCHASING AGENTS

July 30, 1913

• • •

Meeting held at offices of General Motors Company in Detroit at 1:30 P.M.

Present:

Messrs. H. L. Barton
E. J. Copeland
J. S. O'Rourke
L. M. Payne
A. A. Lehr
C. O. Miller
H. R. Viot

Mr. Copeland presided; Mr. Merrill recorded.

STANDARDIZATION OF CONTRACT AND INQUIRY FORMS—In view of the absence of Mr. Main, consideration of this matter was deferred until the next meeting.

CUTTING COMPOUNDS—Mr. Copeland stated that the 'Cadillac Special' compound had not as yet been tried out by the Buick Company. A trial will be made, however, in the near future and the result reported. A discussion was had as to the relative merits of the cutting compounds now being used at the various factories, viz, as follows:

Mystic (Cataract Refining & Mfg. Company, Buffalo)	Price 6¾¢
Cadillac Special (Cataract Refining & Mfg. Co.)	" 4½¢
White Star (White Star Refining Company, Buffalo)	" 4½¢

Mr. Payne stated that the 'Cadillac Special' compound had been tried at the Northway plant some time ago and had not proven satisfactory. The concensus of opinion was that the White Star compound does not give as satisfactory results as either of the other two, the objectionable features being pointed our specifically by Messrs. Copeland and Lehr. Mr. Barton stated that a chemical analysis of these compounds had been made in General Motors laboratory some time back. He submitted said analysis and pointed out the pertinent features of same. Judging from the analysis alone, the White Star compound would be the most desirable of the three, the other two being about equally efficient.

STANDARDIZATION IN STEEL AND SPECIFICATIONS FOR SAME—Mr. Copeland stated that, in line with the action taken by the Board of Purchasing Agents at its last meeting with a view to the adoption of a uniform system for numbering steel specifications and for numbering and painting steel stock, the matter had been

4 M 2

referred to the Board of Managers for approval; that said Board had given its approval to the proposition and had directed Mr. Barton to have a plan prepared, said plan to be submitted to the Board at a subsequent meeting after obtaining the approval thereto of the various managers interested. Mr. Barton stated that Mr. Zimmerschied had some time ago formulated a plan which he considered a very meritorious one. Mr. Zimmerschied appeared before the meeting and explained his plan in detail, submitting blue prints by way of illustration. It was decided that a copy of these blue prints should be sent to each of the Purchasing agents, who would then take the matter up with the

parties in their respective plants interested in the proposition. The results are to be reported at the next meeting.

GILMER TIRE REPAIR PLIERS—Mr. Copeland stated that the Buick Company had taken this matter up with the Goodyear people with a view to having them furnish one of these tools as a part of the repair kit with each set of tires. No reply has as yet been received.

SHELF HARDWARE—Mr. Copeland stated that he had had a list prepared of standard shelf hardware, bolts, screws, nuts, etc. showing Buick's quotations on same and that a copy of the list would be sent to each of the Purchasing Agents within the next day or so. He also stated that, in line with the promise made at the last meeting, he had sent each of the Purchasing Agents a list showing Buick's arrangements with the people it buys from regarding terms and deliveries.

POLISHING MANIFOLDS—The last meeting developed the fact that the outside surfaces of intake manifolds are buffed and polished at the Buick, Oakland and Northway plants, but not at the Cadillac, the latter not regarding it as necessary, and it was decided that the matter should be looked into by the various Purchasing Agents with a view to having the practice discontinued if possible. Mr. Copeland stated that he had investigated the matter at the Buick plant and that it had been decided to discontinue polishing the manifolds on the trucks, but that it had not been definitely decided to discontinue polishing those on the pleasure cars. Mr. Payne stated that the Northway considered it advisable to continue the practice as it contributed to the good appearance of the motor and had certain other advantages. Mr. Miller stated that the Olds intends to enamel its manifolds. In view of these differ-

ences of opinion and practice, it was decided that the matter should be submitted to the Board of Managers for decision.

COLD ROLLED STEEL—Mr. Barton stated that he had received from the various Purchasing Agents lists showing the decimal sizes of C R steel stock used in their plants respectively.

DEFECTIVE ALUMINUM CASTINGS—The reports made relative to this matter showed that the necessary steps have been taken to insure a uniform practice in billing defective aluminum castings, that is to say, such castings returned are to be billed at their original weight instead of at their weight when returned.

4 M 3

BURROUGHS ADDING MACHINES—Mr. Copeland stated that a letter had been received from Burroughs Adding Machine Company offering to renew their arrangement with General Motors Company for a term of two years, that is, to July 11, 1915. It was decided to accept the proposition provided the arrangement is so worded as to cover only the requirements for *Burroughs* adding machines.

SUPPLIES—It was decided that at the next meeting each Purchasing Agent should be prepared to discuss the matter of miscellaneous supplies and should bring with him as full and complete data relative to this subject as possible.

No further business being presented, the meeting adjourned.

T. S. MERRILL,
Secretary.

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E

Defendant's Exhibit (GM) No. 40.

Harry A. Harnde

6676

10-M-1

GENERAL MOTORS COMPANY
MEETING OF PURCHASING AGENTS
Nov. 5th, 1913

Meeting held at offices of General Motors Company in Detroit at 1:30 P.M.

Present:

Messrs. H. L. Barton
F. A. Cowen
W. N. Edson
V. E. Libby
J. H. Main
C. O. Miller
L. M. Payne
H. R. Viot
James Wilson

Mr. Main presided; Mr. Merrill recorded.

STANDARDIZATION OF CONTRACT FORMS — No action as yet by Board of Managers relative to this matter. Certain amendments to the form were suggested. As a result of the discussion which followed it was decided that said form should be amended in the following particulars:

1 - The second sentence of Paragraph 2 amended to read as follows:

"The Seller agrees to increase or decrease deliveries as the Buyer may direct, upon receiving notice from the Buyer so to do."

2 - Paragraph 7 amended by adding at the end thereof the following:

"No material rejected by the Buyer can be returned to Buyer without an order covering same."

3 - Present Paragraph 13 renumbered 14. 4 - New Paragraph numbered 13 as follows:

"It is further agreed and understood that the constituent companies of General Motors Company are privileged to buy under this contract their requirements of the articles referred to therein upon the same terms and conditions and at the same price."

STANDARDIZATION OF STEEL AND NOMENCLATURE—No action as yet by Board of Managers relative to this matter.

10 M 2

GENERAL CONTRACTS—A discussion was had relative to the procedure to be followed in making general contracts to cover the requirements of all or a number of the companies on various items. As a result, it was decided that all contracts entered into by the companies respectively should, whenever possible, contain a provision giving any other constituent company the privilege of buying under said contract.

If at any time a Purchasing Agent finds that he can obtain a better price by contracting for a larger quantity than his own company's requirements he is to bring the matter up at a meeting of the Purchasing Agents in order to combine, if possible, his requirements with those of one or more of the other Companies to obtain the better price due to larger quantity.

2

MISCELLANEOUS SUPPLIES AND EXPENSE MATERIALS—Mr. Main stated that all of the lists had been received and that he expected to have a tabulated statement showing prices ready in time for the next meeting.

DRAWBACKS OF CUSTOMS DUTIES—Nothing further reported.

CUTTING COMPOUND—Mr. Wilson stated that he had nothing further to report at this time.

PATENT INFRINGEMENTS—Mr. Viot called attention to a circular letter received from the Automobile Chamber of Commerce under date of October 24th, 1913 suggesting the advisability of inserting certain phraseology in purchase contracts and orders for goods with a view to protecting members of the Association from charges of patent infringement or patent infringement suits where the alleged infringing device is not manufactured by the member. It appeared from the discussion which followed that all of the companies, with the possible exception of the Weston-Mott Company, already have a provision in their contracts and purchase orders covering this point and therefore that no further attention need be paid the communication referred to. Mr. Edson stated he would see that the forms used by the Weston-Mott Company are amended in this particular.

SURPLUS STOCKS—Reference was made to the fact that the lists of surplus stocks of materials and supplies vary so widely in the manner of their preparation, style of paper used, etc., that it is difficult to file them properly for ready reference. It was suggested that it would be well to have all of said lists prepared upon uniform blanks or style of paper and the information presented thereon according to some systematic method. Mr. Barton was appointed a

committee of one to prepare such a plan and to have it put into operation.

SURPLUS STOCKS (SMALL TOOLS, TOOL STEELS, ETC.)—It was suggested that all surplus stocks of small tools, tool steels and items of that character be transferred from the various factories to the warehouse at Pontiac where they should be listed and copies of the list sent to each of the companies. It was the consensus of opinion that the plan suggested would greatly facilitate the movement of such surplus stocks and therefore should be put into operation. Mr. Barton was requested to take the matter up with Mr. Nash with a view to obtaining his approval to the plan and determining what surplus stocks should be so transferred, and to take any further steps that might be necessary to carry the plan into effect.

10 M 3

SURPLUS STOCKS (SCREW STOCK)—Mr. Edson stated that owing to certain changes in design the Weston-Mott Company has on its hands several tons of 7/16 screw stock, round, regular analysis which it would like to dispose of. He asked that the various Purchasing Agents look into the matter and utilize this stock if possible.

REDUCTION OF DUTY ON MATERIALS PURCHASED—Mr. Payne called attention to the fact that the new tariff law reduces the duty on a number of articles purchased by the constituent companies. He suggested that each purchasing agent obtain a copy of the law and make a careful study of same with a view to determining its effect upon articles in which they are interested.

GENERAL BUSINESS CONDITIONS—Colonel Metcalf made a brief analysis of general business conditions, based largely upon observations made on a recent trip

through the south and other sections. He stated that the indications point to a slackening up of business during the coming months and recommended that a most conservative policy relative to purchasing be pursued. He dwelt at length and with considerable emphasis upon the large saving to the Company which can be effected by obtaining advance dating on goods purchased. Mr. Nash and Mr. M. J. Murphy spoke briefly along similar lines.

No further business being presented, the meeting thereupon adjourned.

T. S. MERRILL,
Secretary

Defendant's Exhibit (GM) No. 41

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GENERAL MOTORS COMPANY
MEETING OF PURCHASING AGENTS
AUGUST 19, 1914

* * * * *

Meeting held at Office of General Motors Company in Detroit, at 1:30 P. M.

Present:

H. L. Barton
W. N. Edson
J. H. Main
C. O. Miller
J. S. O'Rourke
L. M. Payne
J. T. Wilson

Mr. Main presided; Mr. Merrill recorded.

ELECTRIC LAMPS - Mr. Main stated that the Cadillac Company had contracted with Bryan & Marsh of Chicago for tungsten and Mazda lamps. He stated further that the contract is available for all of the companies and that he would send a copy of same to each of the purchasing agents.

EUROPEAN WAR - The possible effects of the European war upon the automobile industry from the standpoint of the purchasing agents was referred to and discussed and the consensus of opinion was that the General Motors companies would not be handicapped or injuriously effected in any way by said war.

STOCK AT PONTIAC WAREHOUSE - It was suggested that the movement of the stock at the Pontiac warehouse would be greatly facilitated if each of the companies would send a man there every week or so to look it over. The Cadillac and Northway companies have adopted that practice with very gratifying results. It was agreed that each company should periodically send a man to look over said stock in order that it might be utilized to the greatest possible extent.

INQUIRIES - Several of the purchasing agents desired information relative to various items and the balance of the meeting was devoted to furnishing said information.

NEXT MEETING - It was decided that only one meeting would be necessary in September; same to be held on Wednesday, September 16th, at the usual place and hour.

T. J. Merrill
Secretary

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Defendant's Exhibit (GM) No. 42

6682.

GENERAL MOTORS COMPANY
MEETING OF PURCHASING AGENTS
August 20, 1915

• • •

Meeting held at the Office of General Motors Company, Detroit, Michigan, at 1:30 P. M.

Present:

J. H. Main
C. O. Miller
L. M. Payne
J. T. Wilson
Mr. Zimmerscheid

Mr. Main presided; Mr. Merrill recorded.

CASE HARDENING COMPOUNDS - The matter of a general contract on case hardening compounds was discussed. Mr. Main stated that a price had been quoted of $76.00 per ton, with a refund of $2.00 a ton on orders for more than five tons and that a better price could probably be obtained provided the Brown-Lipe-Chapin Company agreed to be a party to the arrangement; the above named price being based on an estimated annual consumption of 350 tons. It was decided to leave the matter open for the present. Mr. Main is to write Mr. Chapin regarding the matter and the party submitting the above prices is to again take it up with his people with a view to obtaining a further reduction.

TOOL STEEL - The matter of a general contract on tool steel was discussed and carried over to the next meeting for further consideration. The purchasing Agents were requested to advise Mr. Wilson promptly as to the amount of tool steel used by their respective companies during the course of the year.

Various other matters were discussed but no formal action was taken with relation to any of them.

NEXT MEETING - It was decided to hold the next meeting of the Board at the Office of General Motors Company on Friday, September 17, 1915, at 1:30 P. M.

There being no further business the meeting adjourned.

L. M. Merrill.

4489 Secretary

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Defendant's Exhibit (GM) No. 43

GENERAL MOTORS CORPORATION

1764 BROADWAY
NEW YORK, N.Y.

6683

January 26, 1921.

To all General Officers and
General Managers of Divisions.

In connection with the tentative form of organization recently adopted, the following appointment, with the duties designated, has been made.

Mr. A.B.C. Hardy - Director Purchasing Section -
Advisory Staff - Headquarters, Detroit, Mich.

Duties are specified as follows:-

1. To consider and make such general contracts pertaining to the purchase of materials, supplies and equipment, as in his judgment may be desirable and to the interest of two or more Operating Divisions. The use of such general contracts to be entirely at the option of the Operating Divisions and, when used, all dealings to be directly between the Seller and the Purchasing Division.

2. To have supervision over inter-divisional prices in an advisory way and empowered to take up and adjust all differences of every character whatsoever between Purchasing and Selling Divisions. To have the general responsibility of carrying out any or all policies adopted by either the Executive or Operations Committee in connection with inter-divisional dealings.

3. To represent the Corporation on any or all questions that may arise, of any kind or character, pertaining to purchase contracts where two or more Divisions are involved.

4. To develop co-operation between the Purchasing Departments of all Operating Divisions.

5. To investigate and submit recommendations to either the Executive or Operations Committees covering all purchase contracts which obligate the Corporation or any Division or Divisions to make part or all of its purchases against such contracts. All such con-

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tracts must be approved by either the Executive or Operations Committee.

To assist Mr. Hardy it is suggested that you be good enough to forward to him any and all correspondence which you may now have in your possession or which may later come to your attention, pertaining to matters now coming under his jurisdiction. It would also be appreciated if you would refer to him anything that might be of interest to other Divisions in the above connection.

Kindly advise all Officers under your jurisdiction interested in the above.

Very truly yours,

V I C E P R E S I D E N T.

A.P.S. Jr/K.

Defendant's Exhibit (GM) No. 44

6685

MEMORANDUM OF MEETING HELD IN DETROIT, JUNE 23rd, 1921.

Present: C. S. Mott, Chairman,
P. S. du Pont,
J. A. Haskell,
G. H. Hannum,
H. H. Bassett,
K. W. Zimmerschied,
A. H. Sarver,
A. B. C. Hardy,
H. H. Rice,
W. L. Day,
N. A. Hawkins,
T. S. Merrill.

J. T. Ardis acted as secretary of the meeting.

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CONTRACTS:

Mr. Mott brought out the fact that General Motors Corporation has entered into various contracts with concerns, but the Divisions apparently do not know anything about these contracts and are therefore not availing themselves of possible opportunities to purchase more advantageously, etc. Particular attention was called to the Armstrong

Springs Company, which company has a contract to furnish 60% of General Motors springs and which company has borrowed $1,000,000. from General Motors.

It was agreed that Mr. Main should furnish the General Managers of the Divisions with two copies of all contracts affecting them, which General Motors Corporation has entered into.

Mr. Bassett recommended that the Division Managers recommend to their Purchasing Agents that they get together with Mr. Main, in Detroit, and discuss the matter of furnishing records, data, etc.

MEETING OF CAR DIVISION MANAGERS WITH EXECUTIVE COMMITTEE.

A meeting of the Car Division Managers and Executive Committee was held in Detroit, Michigan, on Thursday, November 3rd, 1921, at 10:00 A. M.

Present:

Mr. C. S. Mott	Mr. W. L. Day
Mr. K. W. Zimmerschied	Mr. H. H. Rice
Mr. A. B. C. Hardy	Mr. P. S. du Pont
Mr. H. H. Bassett	Mr. J. A. Haskell
Mr. G. H. Hannum	Mr. A. P. Sloan, Jr.
Mr. C. F. Kettering	

* * * *

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STANDARDIZING GENERAL SUPPLIES.

Mr. Sloan called attention to the economies that might be effected by the use of standard materials in various Divisions wherever profitable and, as an illustration, stated that the Steel Corporation had gone a long way in this matter by adopting, for example, a certain make of typewriter as standard and, by purchasing in quantities, their various Divisions and Subsidiaries secured the benefit of very low quotations. Mr. Main, who was called into the meeting, stated he is at work on this question and is making contracts for materials and general supplies at the lowest possible prices, so that the Divisions may avail themselves of quotations

thereby secured. In some cases the contracts are for our requirements, while in others there is an obligation to give the suppliers a certain percentage of our business.

Mr. Sloan raised the point that it might be possible to secure lower prices if we obligated ourselves to give the suppliers a definite percentage of our business. Mr. Main advised that every effort will be used to secure the lowest possible quotation, with such obligation on the part of the Company as may be reasonable and necessary.

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Defendant's Exhibit (GM) No. 46

6689

Memorandum

May 5, 1928

To Mr. Alfred P. Sloan, Jr. Subject

I ran into an old friend, who is in the parts business, in Detroit on Thursday. As I have not seen him for many years, I do not think he even knew I was with the General Motors Corporation. We discussed the gradual reduction in parts prices and he stated that the parts men had a good chance to judge the ability of the purchasing agents of the various companies. He stated that in some cases where they are buying the same parts they have been buying for years, they keep ordering these parts at the same prices which ruled at the peak, while others who may be purchasing the same identical pieces, by being keener buyers, are able to buy same much cheaper.

He then stated that it was a strange thing to him but a large corporation like the General Motors apparently had not properly coordinated their purchasing departments, as he knew of cases where one division would be buying certain articles considerably cheaper than another division within the corporation.

I do not know, of course, whether these are the facts in the case. I understand that the corporation is gradually centralizing their purchases but as this will probably take considerable time, it occurred to me that such discrepancies as mentioned above, if they do exist, could be corrected if the purchasing agents would get together frequently and compare prices at which they purchase various classes of merchandise. Possibly they may be doing it now and this may have happened some time ago. I merely write you this for your information, in case it should not have been corrected.

P. S. Stevenson

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Defendant's Exhibit (GM) No. 47

6690

REPORT TO: MR. C.S. MOTT, VICE PRESIDENT

FROM: J.H. MAIN

SUBJECT: PROPOSED CENTRAL PURCHASING DEPARTMENT.

By J.H. Main,
Director—Purchase Section.

Copy for Mr. A.P. Sloan, Jr.

February 6, 1922

NOTE: Illegible stamp appears in center of first page with two checks in lower right hand corner. In left hand corner appears the words "Copy for Mr. A. P. Sloan, Jr."

February
6th
1922.

Mr. C.S. Mott, Vice President,

SUBJECT: PROPOSED CENTRAL PURCHASING DEPARTMENT

A week ago Friday, Mr. Sloan was talking to the writer regarding the centralization of purchasing and requested him to submit to you proposals for establishing such a division.

There are two distinct plans that could be adopted for centralized purchasing, and are set forth on the attached sheets.

Respectfully submitted,

J. H. Main
Director — Purchase Section.

Italics indicate handwriting.

PROPOSAL #1

Elimination of All Divisional Purchasing Departments by Centralization

This plan would be the centralization of everything purchased for all divisions under one head, or division, and would necessitate the elimination of all the divisional purchasing departments, and also of the formation of a central Accounts Payable Division to work in conjunction with the centralized purchasing division.

The personnel of the Central Purchasing Division would be made up of the speciality buyers in the several divisions and would reduce the number now engaged in carrying on the work by at least 50 per cent.

It would also give the Corporation the largest buying power possible and would insure more liberal savings on all its purchases.

Method of Procedure

Requisitions:

Requisitions are issued by the Plant or Department in triplicate on Form A. Triplicate copy is kept by the Plant or Department issuing requisition; original and duplicate copy are sent to the Central Purchasing Division for approval. This office retains the duplicate copy and sends the original to the Chief Clerk who causes same to be stamped for date and time of arrival, and then distributes the requisitions to the several purchasing agents. After the material is purchased, and the purchasing agents have

noted on the requisition from whom purchased, prices and terms, the original requisition is sent to the order clerks for drawing order. When the order has been drawn, the order number is noted on the original

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requisition which is then sent to the Department Requisition Clerk and filed in a binder according to the requisition symbol, (designating plant or department issuing), and in sequence of requisition numbers, (for which each plant and department has a series).

Orders:

Orders are drawn in original and six copies; the original is sent to the vendor; order duplicate is kept by the Purchasing Department for checking and record billings, also as a permanent record; order triplicate is sent to the Accounts Payable Division and used by them in checking billing for material and freight charges. The fourth copy is sent to the Urger Section of the Purchasing Department for following up orders and urging shipments. Various colored signals may be used on the numbered margins of these copies to designate the urgency of each order. The fifth copy is for the records of the Central Office that approves the requisitions on which the order is based and serves as a notice to them that the order has been drawn. The sixth order copy is sent to the plant or department issuing the requisition, serving as a notice that order has been placed against their requisition. The seventh order copy is for the Traffic Department's records and is used by them in specifying to vendor routing to be given shipment.

Requisition and Order Alterations:

Should it be found necessary, after the requisition is issued, to alter or cancel it, an Alteration is issued in triplicate on Form B by the Plant or Department and distributed in the same manner as mentioned above for Requisitions. A Requisition Alteration, after proper notation by the interested Purchasing Agent has been received, he then issues Alteration Order in original and six copies and distributes these the same as a regular order.

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Quotation Form:

When quotation is desired from a firm, a Request for Quotation, Form C, is issued in triplicate. The triplicate copy is permanently filed by the Purchasing Department and the original and duplicate are sent to the firm from which quotation is desired. They frequently quote by returning the duplicate with their quotation shown thereon.

Status of Order:

The plant or department issuing requisition is kept advised of the status of each corresponding order by the use of Form E by the Purchasing Department Urger Division.

Handling of Invoices in Purchasing Department:

It is specified on the reverse side of our order original that the vendor is to send invoice to our Purchasing Department. When received, all copies are back stamped with date and hour of arrival and sent to Purchasing Department Order File Clerk where the quadruplicate copy is detached and sent direct to the plant or department for

which the material was ordered. Order duplicate is then attached to the original, duplicate and triplicate copies of invoice, and these papers are all passed on to the price checkers, contract clerk or price record clerk. Orders attached to invoices for shipments against contracts are recognized from the fact that each order against a contract has typed on the order duplicate "account contract." These order duplicates, with invoice copies attached, are passed on to the Purchasing Department contract clerk who checks the billing rendered for quantity, price and terms, record these on the contract sheets and on the back of the order duplicate, which is then detached for filing by order file clerk. Invoice is then approved and sent to the Accounts Payable Division. Invoices for shipments that do not apply under contracts are sent to Purchasing Department price checkers or price record clerk with corresponding order original attached, the price record clerk receiving directly from the order file

clerk all invoices whose attached order duplicate bears a Purchasing Agent request that billing be permanently recorded on the price card for future reference and indirectly from the order file clerk, via price checkers, such invoices as the latter recognize as desirable for recording on the price cards. Invoices handled by the price record clerk are checked for quantity, price and terms, and these are recorded on price cards as well as on order duplicate, the latter being detached for filing, invoice approved and sent to the Accounting Department payable division. Invoices handled by price checkers are also checked for quantity, price and terms, recorded on order duplicate, which is detached for filing, invoice approved and sent to Accounts Payable Division.

The Accounting Department serially numbers the original, duplicate and triplicate invoice copies, using only one series of numbers for all invoices, check quantity billed against order triplicate they have on file, check extensions and note on all copies the proper account which the Cost Department should debit; retain duplicate copy as a permanent record. Triplicate copy is sent to the Cost Account Division where entry is made on the cost records, as per charge shown on this copy, and it is then destroyed. If the invoice is one from which cash discount is allowed for prepayment, or bears spot cash or ten days term, it is paid promptly and the original is sent to the plant or department for which material was ordered, checked and approved by them and returned to Accounts Payable Division which notes whether any exceptions have been made to the billing for quantity or quality. If it is found that the invoice original has been favorable approved, it is then sent to the Accounting Department for permanent filing. Should the plant or de-

partment take exceptions to the quantity or quality of material delivered, a claim is prepared by them in accordance with the facts and sent to the Central Office for adjustment. The original of an invoice from which discount is not allowed and on which we are allowed thirty days or longer for payment is sent directly to the originating plant or department for checking and approval as to receipt of material and to give them opportunity to take necessary exceptions to quantity or quality. After approval, it is returned to the Accounts Payable Division which makes payment in accordance with the terms noted thereon, after any claim that may have been made by the plant or depart-

ment is adjusted. After payment, it is sent to the Accounting Department as permanent record.

Omission of Necessary Information from Invoices:

When an invoice is received with any of the information requested on the reverse side of the order original missing, Form E is used in returning invoice to the vendor for addition of the details omitted.

Advice to Accounting Department of Retention of Invoice:

Should an invoice be retained in the Purchasing Department beyond its due date, while awaiting additional information from the vendor, the Accounting Department is notified of this and the reason therefor.

Delinquent Billing:

Delinquent invoices are urged by the Purchasing Department using Form F. The general rule on urging billings is to list on this form each item remaining unbilled on any order prior to the current calendar month.

Return Orders:

When material is received by a plant or department otherwise than as ordered and cannot be used as received, permission is secured from the vendor to return the shipment and shipping instructions for its return are given to the plant or department on Form G. This form is issued in original and

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seven copies and distributed according to notation on each copy. Upon return of one copy of this form to the Pur-

chasing Department with B/L attached, credit invoice is secured from the vendor and upon receipt of this, credit invoice by the Purchasing Department it is recorded on the order duplicate and sent to the Accounts Payable Division, where it is handled as in the case of a debit invoice.

The forms mentioned in the above plan are the same as are now used by our several divisions. The only change necessary would be the standardization of these several forms when the present stock is used up.

This plan is now in operation by the following companies with certain detail modifications to dovetail in with their other departments but the general outline is identical:

Western Electric Company
U.S. Rubber Company
Standard Oil Company of New Jersey
New Jersey Zinc Company
The Barrett Company
Grasselli Powder Company
Armour & Company
du Pont de Nemours & Co.
Swift & Company
Standard Oil Company of New York
American Tobacco Company
Municipality of New York
The Proctor & Gamble Company.

In the event it is not desirable to have a central Accounts Payable Division, the above can be changed as far as the Accounting Department is concerned by allowing the Divisions to retain the invoices which are sent to them for the checking of quantities and specifications, and handling in the same manner as they are now doing at the present time.

In cases of discrepancies,—in quality or quantity, in the invoices, a notification form could be drawn up and mailed to the central organization for the correction of their records. This would in no way interefere with the general plan as outlined.

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PROPOSAL #2

ENLARGEMENT OF PRESENT PURCHASE SECTION:

This plan would be an enlargement of our present Purchase Section with the necessary authority to carry on the work.

Method of Procedure

Standardization of Materials:

In order to make this plan workable, it would be necessary to establish a list of all standard materials to be contracted for. This could be accomplished by having each division make a list of all materials purchased during a period of 12 months. These lists from the several divisions would be sent to the Purchase Section to be analyzed and recompiled. All materials that are common in two or more making plants, or materials of sufficient quantity, to warrant a general contract, would be listed by the Purchase Section. The several Divisions then would be notified that on all future purchasing on such items would be handled by the Purchase Section.

Contracts:

Contracts on the listed materials would be made when favorable market conditions warranted or upon receipt of requisitions from the divisional purchasing departments. All contracts would cover the requirements of all divisions. Copies of such contracts made would be sent to the several divisions to specify against on their regular purchase orders.

Maintaining Divisional Departments with Reduced Forces:

Plan #2 would not eliminate the divisional purchasing departments but would merely reduce the number employed in these departments thereby effecting a saving in the personnel.

Personnel:

The personnel of the Purchase Section would be selected in the same

manner as outlined in plan #1.

The writer believes that either plan would accomplish the same purchasing power and savings to the Corporation.

Defendant's Exhibit (GM) No. 48

6701

February 9, 1922.

Mr. J. H. Main, Director,
Purchase Section,
General Motors Corporation,
Detroit, Michigan.

My dear Mr. Main:-

Many thanks for your very kind study of February 6th with reference to purchasing activities, Advisory Staff. I have looked this thing over in a general way and fear as is often the case, that we did not start from a common understanding although I thought I made myself clear. However, no harm is done except that I want to correct a misapprehension which might lead to a lot of misunderstandings.

It was not my idea that we would in any sense centralize purchasing. As a matter of fact, it is not my idea that we centralize anything and I would hate to have anything that I said misconstrued into the thought that my mind is running that way for I say, frankly, it is not. I am not saying that my mind might do "x" years hence because we are all creatures of necessity and must change our viewpoint as the problem changes, but as things stand today I am not for that sort of thing. What I am for, however, most absolutely - and it was from that direction that I intended to approach the matter - is that everything should be done to capitalize to the benefit of the stockholders every advantage that lies to General Motors on account of the magnitude of its operations. A big institution as big as General Motors, in my judgment, is handicapped in some ways on account of its great size and the conflicting things which must be harmonized, all of which take time. There must, however, if we are going to exist, be assets to offset these liabilities, such as a better opinion when it is crystalized on account of the various viewpoints which are injected into the final decision and the advantage of mere size of which purchasing advantages is one. Therefore, what I intended to ask you was, now, in view of your experience in the post you are now holding, do you think we should capitalize the enormous purchasing power of General Motors to the end that we gain an advantage by a lower price consistent with all other things. Perhaps I should understand your study to indicate that there was only one way to do that and that was by centrally purchasing everything. If I am to understand that that is your viewpoint then if you will set me straight I will understand it and can proceed accordingly. On the other hand, if we started from the wrong base line then this

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will correct you and I will then ask you to submit, through Mr. Mott, another study setting forth what your idea would now be in view of this letter.

Thanking you in advance, I remain,

Very truly yours,

A.P.S.Jr./K

VICE PRESIDENT.

c/o Mr. C.S.Mott

4500

NOTE: Illegible stamp appears in upper right.

Defendant's Exhibit (GM) No. 49

GENERAL MOTORS CORPORATION

67033

DATE May 8, 1922.

No. 98.

SUBJECT PROPOSED PLAN FOR CO-ORDINATION OF GENERAL MOTORS PURCHASES.

To General Managers of Divisions.

COPIES FOR General Operating Officers,
Financial Officers,
Directors Advisory Staff Section.

I am attaching the following:-

1. Copy of a statement which I have prepared, covering what I believe is a practical plan to cover the above subject. I have gone into considerable detail because I thought it was best to put before the Corporation the reasons leading up to the particular program suggested.

My thought covering the steps in adopting this plan, will be substantially as follows:-

1. Would appreciate it if you would read this, making such criticisms and suggestions as you of course can make, turning these over to your Purchasing Department and asking that Department to amplify your criticisms and suggestions by others that they might make.

2. I will ask the Director of the Purchase Section, Advisory Staff, to contact with your Purchasing Department for the purpose of getting all the various viewpoints together in order to develop the best plan that we can at the moment, recognizing that even such plan will be subject to improvement from time to time.

3. In above manner the viewpoints of the whole Corporation can be collected in one place. We will then go over the matter in detail and submit a more definite and complete plan for final approval & further criticism.

Very truly yours,

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A.P.S.Jr./K VICE PRESIDENT.

NOTE: Handwritten signature Alfred P. Sloan.

PROPOSED PLAN FOR CO-ORDINATION OF GENERAL MOTORS PURCHASES.

6705

I think that it will be generally recognized that the purchasing power of the General Motors Corporation as an institution has never been capitalized to the extent that it might have been or must necessarily be in the final analysis. This comes about through various reasons which need not be discussed here.

I believe it will be equally recognized that it is of substantial advantage to the Corporation to adopt some such plan. I am not in a position to state what saving would thus accrue to the Corporation. This would require quite a study and I do not know as there would be any particular advantage in having such a study made because it is so very obvious that the saving would be very large and well worth any expense incidental to same. My own viewpoint, based upon such rough figures as I have gone over, indicates a saving in a normal year's operation of not less than $5,000,000 and I would not be surprised if this even reached as much as $10,000,000. The Director of the Purchase Section, Advisory Staff, advises me that he feels that proper co-ordination of purchases on a suitable plan would result in savings all the way from 10% to 20%. I feel that this is entirely impossible. In any event, we all agree I am sure, that the savings are sufficient to justify us in testing out such a plan. It must be recognized that at the present time considerable quantities of our purchases, such as tires and to some extent our steel requirements and closed bodies, are co-ordinated so far as practical purposes are concerned and that these items would undoubtedly not be affected by any plan that could be developed.

Better prices would come about, as I see it, in perfectly logical and economic ways. The concentration of our purchasing power naturally means quantity and quantity means better prices. There are also other advantages that I can see. It may be possible to take such a large percentage of the output as an institution through concentration, that marked economies could be effected in the operation of that institution in which economies we would properly participate. The Ford Motor Company has very successfully capitalized its enormous purchasing power in this direction. A large volume of assured business to any manufacturer justifies the lowest possible price - even approaching cost - for the reason that the maintenance of the organization is assured and the balance of the business being smaller in volume, can easily be made to pay a return on the whole investment without an excessive sales price for the overhead is taken care of by a substantial volume of business such as one institution, like General Motors, can offer. This is particularly true, I believe, in times like these where the necessity of keeping the organization intact and the absorption of the overhead is the big problem that the manufacturer must face. Still again, a large volume means that a

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supplier properly identified with us can do many things to reduce cost of production which he can not afford to do if the business comes in small volume and the duration of it is uncertain. The proper co-ordination of purchasing and standardization should result in a smaller number of sizes. It also means ability of one Division to help out another in an emergency and ability to use materials of both raw and expense character in other Divisions if one Division, through changes or otherwise, is no longer able to use same. It should also enable inventories to be kept at a minimum on account of quicker service on the part of suppliers who are furnishing the same thing to many Divisions and even the still further reduction of inventories by forcing suppliers to whom we are giving valuable business, to keep storehouses or points of contact with our Divisions available with supplies on hand to be taken as needed. In still other instances it should result in a better product. We all know how difficult it is in certain steels to obtain the right specifications, particularly when we are dealing with heat treatments. Co-ordination of such purchases should result in the high heats being taken by the Division requiring them; the lower heats likewise to the end that both Divisions profit and a better product results. In one instance in my experience I was able for years at a time to maintain carbons within five points by an arrangement like this. All the above are reasons outside of the principal one of a greater volume that will surely result in a more effective handling of the Corporation's business by a proper co-ordination of its purchasing power.

I feel further that the placing of specifications at certain times of the year and the most propitious time will result in our being able to take advantage of a better market and a greater appreciation of General Motors purchasing power on the part of large suppliers of raw material. I do not think it will be necessary to elaborate further on the tremendous advantages accruing to the Corporation by all these and many other factors.

THE PROBLEM PRESENTED.

The question of co-ordinating purchases may seem to be comparatively simple, but when one considers the extremely technical character of practically all the Corporation's product and recognises that we are dealing with many personalities and viewpoints developed through years of contact with certain products as compared with others, the problem naturally becomes one of greater complication. There are articles that the Corporation uses which are more or less of a technical character, and in order to get proper co-ordination a general agreement is essential that a specific article will be satisfactory for all and perform its functions as good as all the various products for which it is to be substituted. The problem, therefore, is two fold - to co-ordinate these different viewpoints into an agreement as to what is required and then to develop a contract predicated upon that agreement. As a matter of fact, the co-ordination and agreement as to the specifications is, in my judgment, the hardest part of the problem and must be taken up and can

only be taken up one item at a time and each thrashed out individually. Naturally, some items require more consideration than others - some hardly any at all. Each one must be considered on its merits and specifications agreed upon before it becomes really a matter on which a contract can be based.

ONE PLAN THAT APPEARS PRACTICAL

Having reached the conclusion that the co-ordination of purchases will result in benefit to the Corporation and having some appreciation of the problem presented, I have attempted to fit a plan into the present Corporation's organization, making as few changes and involving as little extra expense as may be necessary to obtain the desired result. I believe that the simplest way to present the subject is to define the duties of those parts of the organization as they may be affected by the application of this particular proposition.

Duties of Director of Purchase Section, Advisory Staff. It would be the duty of the Purchase Section of the Advisory Staff to develop a list of articles in which co-ordination would be possible and profitable. The responsibility of this would be lodged definitely in this place. After any plan that might be adopted was in use for a sufficient length of time the Executive Officers of the Corporation would have a right to place the responsibility on the Purchase Section of the Advisory Staff for any shortcomings that might have developed on articles which were not co-ordinated and which should be co-ordinated. It would be the duty of the Purchase Section to develop the necessary contact, both personally and otherwise, with the Purchasing Departments of each Division in order to develop the necessary data upon which its recommendations would be based. It would further be the full responsibility of the Purchase Section to secure the necessary co-ordination from other Staff Sections.

Duties of other Advisory Staff Sections. It would be the duty of other Sections of the Advisory Staff to co-operate with the Purchase Section in the development of the necessary specifications to the end that the viewpoints of the different Divisions were properly co-ordinated into one set of specifications that would be common for all. It would be the duty, for instance, of the Manufacturing Section to contact with the Divisions to the end that an agreement was effected as to what constituted a proper specification for the particular article in question to the end that the Purchase Section would have a definite concrete proposition upon which a contract could be properly based. The same would apply to other Sections of the Advisory Staff.

One of the most important duties of other Advisory Staff Sections and of the Financial Staff also would be to determine that the source of supply was properly equipped both from the standpoint of finance facilities and personnel to properly assume any obligation that the Purchase Section might feel warranted in placing with such supplier. This would particularly apply where a considerable proportion of the Corporation's needs were, for the sake of reasons set forth in this program, concentrated with one source of supply.

Duties of General Executive Officers. While the responsibility for the whole program is lodged with the Purchase Section of the Advisory Staff, manifestly there may be instances where it would be impossible for that Section, through other Sections like the Manufacturing Section, to secure the necessary approval of a common specification or on a proper contract based on such specifications. Take the case, for instance, of leather belting. The Purchase Section is responsible for proper co-ordination leading to the development of a contract which means the most for the Corporation. In co-ordination with the Manufacturing Section it develops a set of specifications and perhaps other information incident to the subject. The Manufacturing Section takes up with the different Operations the development of a specification, if one is necessary, that will be satisfactory to all. In the event that one Operation disagrees and requires something special and the Manufacturing Section feels that their position is unreasonable, in that event that Section reports the matter to the next in line in authority to the end that a final agreement is effected which all can reasonably support. In the final analysis the Operating Vice President has the ultimate decision as to what is or is not to be used. Instances of this kind will hardly ever occur, but the contingency must be provided for.

I think that the above will outline the application of the plan to the organization as it now stands.

METHOD OF PROCEDURE.

The procedure in an individual case would be substantially as follows:-

1. The Purchase Section, Advisory Staff being charged with the full responsibility recognises an article such as leather belting as a desirable one to contract for in quantity, believing that a better price and other advantages will accrue from same. Recognising that there would be a difference of opinion among the Operating Divisions as to what leather belting should consist of, they ask the Manufacturing Section to develop a specification. The Manufacturing Section takes the matter up with the corresponding departments in each Operation and in the course of time works out a specification which, we will say, all but one Operation will support. That Operation perhaps feels, rightly or wrongly, that they need something special which prevents the full co-ordination of the Corporation on the particular article in question. It would be the duty of the Manufacturing Section in such event, to do everything it could to properly sell that Operation that they could and should use the standard specification. Failing to do so the Manufacturing Section would take it up with the next in line who would be the Vice President in charge of the Staff. That officer would take it up with the Operating Vice President who, after looking into the matter,

would make a decision which would be binding on all parties and would either modify the specification to conform with the objecting Divisions objections or require them to accept same or make an exception, all as his judgment dictated.

2. Having in that way come to a common agreement as to what constitutes leather belting, it would be the duty of the Purchase Section to effect a contract, developing into same all the advantages that their experience dictates that should accrue to the Corporation. They then would submit that contract to the Purchasing Departments of each Division in the hopes that it would be satisfactory. In the event that it was not satisfactory to one or more Divisions and in case the Purchase Section felt it was a proper contract as evidenced by the fact that it is satisfactory to the great majority of the Divisions, in such an event the procedure would be the same as outlined above to the end that ultimate co-ordination would be obtained and all would subscribe to the particular contract or that contract would be modified as the proper authority felt was desirable. Having arrived at that point, then the Purchasing Departments of each Operation would, to all essential purposes, cease to contract for that particular commodity and that commodity would be taken up by the Purchase Section of the Advisory Staff and until further change was affected that Section would handle the contracting of that commodity exclusively for the benefit of and on account of the various Operating Divisions.

3. The Operating Divisions would use the contract as a general contract; would place orders against same; would liquidate the indebtedness caused by these purchases on their own account in the usual manner. It would make practically no difference in the functioning of the Purchasing Department of each Operation except that the initial placing of the contract through the necessity of co-ordination was removed from their province and became the duty and responsibility of the Purchase Section of the Advisory Staff.

4. In the case of contracts calling for rebates at the end of the month for the purpose of protecting prices or for any other purpose, such rebates should be handled by the Purchase Section, Advisory Staff, as might be worked out in each individual case and all such rebates would be credited through the General Office to the Division at the end of every month, not specifically but as a general sum. This would be desirable because to get the benefit of the lowest possible price objections are some times made on the part of the suppliers in disclosing that price. In this way the Divisions would get the full benefit of the reduced price by taking the adjustments as other income. While that method would, to a certain extent develop an incorrect cost of sales, the errors would be very small and such a method would be better probably than to deal with each individual item separately. In the event that the price made to the Corporation on any special contracts was an open one, the Purchase

Section of the Advisory Staff would have no duties to perform after having effected the contract in question.

5. In the event that it was necessary in order to insure the lowest possible price, to obligate the Corporation to take a specific amount of material from any supplier, such contract could only be entered into on the approval of the Operating Vice President. In the event, however, that such contracts call for an obligation, limited by a certain percentage of the Corporation's purchases without involving quantity, an agreement on the part of all Operations based on recommendation of the Purchase Section would be all that would be necessary to authorize the Director of the Purchase Section to effect such contract.

6. One of the most important considerations that not only the Purchase Section but other Staff Sections co-operating with same must determine is the ability of a source of supply to assume an obligation that might be placed with such source, having in mind the ability of that source to comply with delivery requirements. Manifestly, it is essential in order to capitalize to the fullest possible extent the Corporation's purchasing power, all as outlined in this program, that such power should be centralized in a limited number of places and as big units as possible and conversely, it must be recognized that in capitalizing the purchasing power in that manner, a liability is created to the degree that the supplier assuming the obligation may not be able to comply with same. In such a contingency the Corporation would be placed in a position where it would have to go on the market and purchase large quantities of material at a time perhaps when the market had considerably advanced, being penalized to that degree, but more important yet it might have difficulty in obtaining the necessary supplies at short notice and when suppliers were well filled up with specifications from other manufacturers and in that way its entire manufacturing program might be jeopardized with a loss many times greater than would be saved. It is manifestly impossible to lay down any fixed rule for the liability thus created could only be determined in each individual case and would be a summation of many factors such as nature of the material, number of sources of supply available, and innumerable others that would be unnecessary to mention. This phase of the program should be most carefully considered by the Purchase Section as it is from some standpoints more important than contract price and not only the greatest care should be exercised but the complete co-operation of other Staff Sections should be enlisted as well as the Purchasing Departments of the various Divisions and Subsidiaries having experience perhaps extending over years with one supplier and another to the end that the Corporation's interest is protected to the fullest possible extent.

I have not attempted in the above to go into any particular details as my intention is to submit the above to the various Operations for criticism and suggestions, believing that a result of the viewpoints thus gained a more definite form of treatment can be developed.

Alfred P. Sloan, Jr.,
Vice President.

BUICK MOTOR COMPANY 6712

INTER-ORGANIZATION LETTERS ONLY

Subject

Date 3-11-22

For attention of Mr. Alfred P. Sloan, Jr.,
Vice President,
General Motors Corporation,
New York, N.Y.

Dear Alfred:-

I enclose herewith suggestions of Mr. George Allen, our General Purchasing Agent, in relation to the proposed plan for co-ordination of General Motors purchases.

In addition to what Mr. Allen has written I feel, after having read your plan, that the principle of it is correct and will undoubtedly result in the saving of a great deal of money to the Corporation. I believe, however, care should be exercised in the development of the plan along the lines suggested by Mr. Allen, namely, that we should start on articles of more or less standard classification, such as he has recommended, and be careful about getting into manufactured production parts bought from outsiders until such time, anyway, as the plan is in good working order; then, and only at that time would we be in a position to determine just how many different things could be in a common sense sort of way gradually worked into the plan to the benefit of the Division and the Corporation as a whole.

In summing up the matter, I want you to know that I subscribe to the plan in general, if handled in a sensible, frank and co-operative manner with the personal contact of the Division Purchasing Agents and General Managers, which it is possible to get without any difficulty, and the whole result, I feel, will be most beneficial to the Corporation in every way.

Very truly yours,

President & General Manager.

HHB-m
ENCL.

4510

6713

BUICK MOTOR COMPANY

INTER-ORGANIZATION LETTERS ONLY

Subject Co-ordination of General Motors Purchases Date March 11, 1922.

For attention of Mr. H. H. Bassett:

I have read the proposed plan for co-ordinating of General Motors purchases, by Mr. Alfred P. Sloan, Jr., several times; have given it a great deal of thought, and have discussed it freely with the Buick Purchasing Staff.

There is very little that I can say regarding the advantages of such a plan without repeating what has been said by Mr. Sloan, as it is obvious that large savings are possible by such co-ordination. It is my thought that this will be accomplished to quite an extent by enabling the smaller Divisions of the Corporation to purchase their materials at prices which are obtainable by the larger Divisions, and undoubtedly there are many instances wherein the larger Divisions will also benefit by reason of the greater volume.

The only question in my mind is regarding the extent to which this plan may with safety be carried. I believe we need not fear a repetition of conditions which existed during 1919 and the first half of 1920, but the fact that the present situations will change and shortages of material again obtain, should not, in my opinion be entirely lost sight of in this connection.

I assume that if this proposed plan is adopted, the tendency would be to make one Contract for each article selected where possible, in order to get full advantage of volume, as obviously any division of Contract and consequent reduction in quantity would, to the extent that such divisions are made, defeat the purpose of the plan. Therefore, the materials to be included in such general Contracts should be selected with great care, having in mind the possibility of obtaining such materials elsewhere on short notice should anything happen to prevent the contracting source from fulfilling its obligation in the way of supplying the materials in the required time. In my opinion it would be dangerous to make general Contracts for articles that are special to one Division, although articles of a similar nature but of different design are used by several Divisions. I refer particularly to manufactured materials for production.

4511

If trouble developes with any article of this nature, (and with the great variety of materials used, trouble does develop frequently) and only one source of supply, it often would be impossible to correct the condition in time to avoid interruptions to our production; but in the meantime a second source can usually increase quickly and save delays and shut-downs. Experience has taught us that trouble may be expected at times from the most reliable of sources and this is especially true regarding manufactured articles, such as valves, springs, malleable castings, various stampings, etc. There are many other instances which might be mentioned, but I think these will serve to illustrate my point.

Sources of supply must also be thoroly investigated with reference to their ability to serve the Corporation's needs at all times.

Raw materials and standard parts are, in my opinion, much more suited to this plan. A number of such items are already covered by General Motors Contracts.

I am listing below a few items which I believe could be so covered with safety, and undoubtedly with large savings to the Corporation.

Pig Iron
Steel - All kinds
All Non-Ferrous Metals
Oils - All Kinds
Lumber
Coal
Coke
Leather Belting
Top & Trim materials
Hair
Glue
Pipe & Fittings
Various Tools
Sand

and many others of more or less standard nature.

Up to the present time such progress as has been made has been by the Director of Purchase Section Advisory Staff taking up with Purchasing Agents of the various Divisions, who in turn must sell their manufacturing departments. The proposed plan of having the Manufacturing Section take up with manufacturing departments of Divisions appeals to me as an improvement and one that will bring quicker results.

Yours very truly,

Geo. S. Allen

General Purchasing Agent

4519

Defendant's Exhibit (GM) No. 51

6715

GENERAL PURCHASE PLAN

April 13, 1922.

Mr. J. H. Main, Director,
Purchase Section,
General Motors Corporation,
Detroit, Michigan.

My dear Mr Main:-

When I was in Detroit last week you recollect I had a little talk with you relative to a more definite program for capitalizing General Motors purchases and I told you that some weeks ago I had worked out something that I propose sending out to all the Division Managers in order perhaps to have the thing in little more definite shape which I think you believe is desirable.

I submitted this program to Mr. Bassett and received his comments, through Mr. Allen, Buick Purchasing Agent. Mr. Allen seemed to be in accord with the whole program and simply pointed out, very properly so, the importance of dealing with sources of supply that were reliable and that would not go back on us in times of stress. This, of course, is just as important a phase of the situation as the question of getting the right price.

For your information I am enclosing herewith the following:-

1. Copy of the program which I laid down.

2. Copy of letter which I propose sending to General Managers of Divisions.

You see I have approached this matter in rather a conversational way because I thought that it would be well in setting the plan up to have the reasons pretty well laid down for I believe that the reasons are so apparent that no reasonable man could possibly fail to see the absolute necessity of doing just exactly what we propose doing even if the particular way of doing it should be modified.

My thought would be to send copy of this to the General Manager of each Division and ask him to look it over and take it up with his Purchasing Agent and any comments that the General Manager might want to make would be made through his Purchasing Agent. You would then contact with the Purchasing Agent and either adopt this plan or modify it, as you might elect. What I want to do is to feel assured that you as the Director of Purchase Section have the necessary authority

4513

to capitalise General Motors purchasing power to the fullest possible extent. It is a very important thing and something we have not fully appreciated or made effective and rather than have it drag along and perhaps take five years to work out, I would like to hasten the ultimate end, if I possibly could. Therefore, if this plan goes through, I should feel that you were responsible for putting this thing across and if anything comes about that will prevent you from doing so, it will be up to you to take it up with me.

Will you please, therefore, as the next step, after having gone over these papers, advise me that they are satisfactory or submit such modifications as you think should be essential, either as to the way I presented the matter, the facts in the case as developed or the method of having it adopted by the Corporation.

Very truly yours,

A.P.S.Jr./K

VICE PRESIDENT.

Encs.

Defendant's Exhibit (GM) No. 52 · 6717

The Dayton Engineering Laboratories Co.

Dayton, Ohio

May 16, 1922.

Mr. Alfred P. Sloan, Jr., Vice President,
General Motors Corporation,
New York City.

My dear Mr. Sloan:

Your General Letter No.28, May 8th, presenting plan for coordination of General Motors purchases, is received.

I have gone over this carefully with our Supervisor of Purchases, Mr. Cromer, and there does not seem to be anything in it that conflicts with our present plan of operation.

Yours very truly,

THE DAYTON ENGINEERING LABORATORIES CO.

G. B. McCann
Treasurer.

gbm-b

4515

Defendant's Exhibit (GM) No. 53

6718

CADILLAC MOTOR CAR COMPANY

DETROIT, MICHIGAN

May 15, 1922

Mr. Alfred P. Sloan, Jr.,
General Motors Corporation,
224 West 57th Street,
New York City.

Dear Mr. Sloan:

Acknowledging your circular letter No. 25 on the proposed plan for co-ordination of General Motors purchases, would you please send me another copy.

I am very glad you are approaching the subject by offering the matter for discussion before adoption.

I have always been very keen for a co-ordination of purchases but I have seen the evils of carrying it too far when the American Bicycle Company attempted it, and the experience of the General Motors itself was disastrous. Neither of these was attempted in the right way but I believe can be done by the General Motors now.

But the fact that others have failed indicate, I think, that we should go slowly and only as fast as the way is quite clear.

Yours very truly,

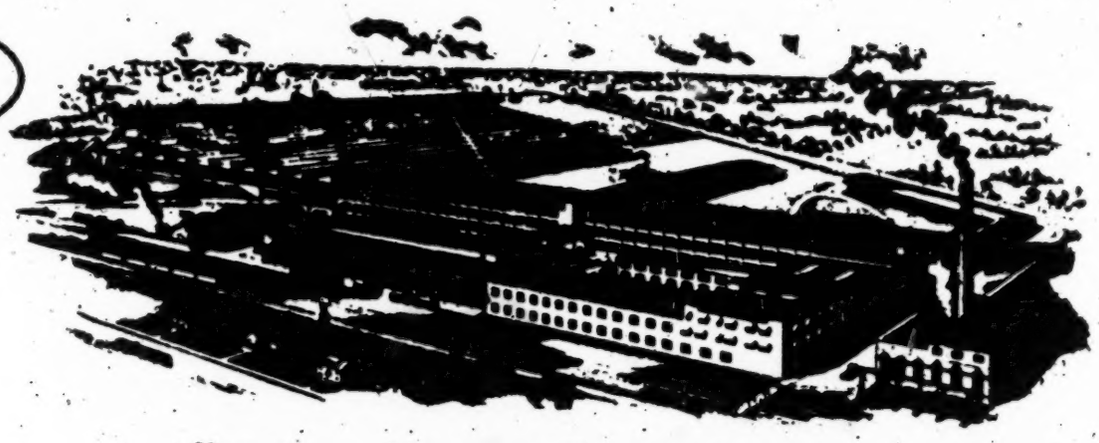
General Manager.

HHR:J

4596

Defendant's Exhibit (GM) No. 54

6719



CABLE ADDRESS
GENTRUCK
PONTIAC, MICH.

GENERAL MOTORS TRUCK COMPANY

DIVISION OF
GENERAL MOTORS CORPORATION

PONTIAC, MICHIGAN

ADDRESS ALL CORRESPONDENCE TO THE COMPANY

May 17th, 1922

Mr. Alfred P. Sloan, Vice President,
General Motors Corporation,
New York City.

Dear Mr. Sloan:-

We have gone over your proposed plan for co-ordination of General Motors purchases, and not only agree with it and see nothing wrong in the plan outlined, but we feel like complimenting you on the painstaking care you have used and on the diplomatic manner in which you have put together the first comprehensive plan for co-ordination of purchases that we have ever seen.

You will have in this as in all things for the betterment of the Company's interests our best co-operation.

Very truly yours,

WLD

General Manager

6717

Defendant's Exhibit (GM) No. 55

6720

SAMSON TRACTOR COMPANY

DIVISION OF GENERAL MOTORS CORPORATION

JANESVILLE, WISCONSIN

May 22, 1922.

Mr. Alfred P. Sloan, Jr.,
General Motors Corporation,
New York, N. Y.

Dear Mr. Sloan:

Replying to your general letter #25, dated May 8, 1922, in reference to the Proposed Plan for Co-Ordination of General Motors Purchases.

After passing this plan over to our Purchasing Department to read over carefully, they have no suggestions to offer and believe it will work out very satisfactorily with us and we would be more than pleased to cooperate to the best of our ability if it is put into effect.

If Mr. Main should ask us for any detailed information on this subject, we will be pleased to collect it and send it on. Up to the present time we have not heard from him.

Yours very truly,

J. A. Craig

General Manager.

JAC-F

6722

I can assure you that with the exception of these two items, which I suggest are not included for consideration, we will be glad to cooperate and take advantage of the scheme.

Yours very truly,

HARRISON RADIATOR CORPORATION

Harold C. Harrison

President.

HCH:M

4519

Defendant's Exhibit (GM) No. 56

HARRISON RADIATOR CORPORATION.

LOCKPORT, NEW YORK.

Herbert C. Harrison

6721

May 24th, 1922

Mr. A. P. Sloan, Jr.,
General Motors Corporation,
New York City.

Re Proposed Plan for Co-ordination of General Motors Purchases:
General Letter No. 25.

Dear Mr. Sloan:

I have carefully read over the statement which you mailed me under date of May 8th, relative to General Motors purchases. I have also had our purchasing department go over this, and have talked it over with them.

The plan outlined would be entirely satisfactory to this Division, and I have no doubt in many cases some saving could be affected, where material which is very widely used is comprised. I would personally doubt whether the actual net saving to the Corporation will ever be nearly as large as the figures indicate, since, in order for the scheme to function, in the case of all small transactions a very considerable overhead will be involved, which will never be charged against the purchase of the particular article; and for this reason we will not know actually the cost of small purchases.

There is, of course, no doubt whatever in my mind that in particular cases, such as steel, coal, and possibly such supplies as belting, considerable saving can be effected.

In so far as the plan affects this division, I would not wish the purchase of our principal raw material, brass and solder, to be included, unless it were shown that these items were largely used by other divisions, which I think is not the case. I do not believe any saving could be effected by centrally purchasing either of these materials, in view of our experience and the fact that we have been large buyers of both for a number of years. The only other division which uses these materials in quantity is probably the Buick, and I am hoping that some day we will take over the Buick core business and concentrate the manufacture of radiators here, inasmuch as we can doubtless save the Buick money over their cost, and produce at a considerable profit to this division.

4529

Defendant's Exhibit (GM) No. 57

6723

CHEVROLET MOTOR COMPANY

DIVISION OF GENERAL MOTORS CORPORATION
GENERAL MOTORS BUILDING
DETROIT, MICH.

May 27th, 1922.

Mr. A. P. Sloan, Jr.,
General Motors Corporation,
New York, N. Y.

Dear Mr. Sloan:

With reference to your letter of May 5th, Number 25, I attach hereto our Purchasing Department's comments on the subject of Co-ordination of Purchases.

It is my opinion that the plan, for the present, should be confined to articles standardized for use by all groups, and that the subject of car parts should be approached carefully, it being a fact that past general contracts for automobile material have proved a drawback rather than an advantage during this past year.

Very truly yours,

WEK/c

4521

6724

COPY.

May 24th, 1922.

MEMORANDUM Mr. W. S. Knudsen.

I am returning to you Mr. Sloan's proposed plan for the co-ordination of General Motors purchases. I wish to make the following comments:

I believe it would be wrong for the Purchase Section of the Advisory Staff to purchase car parts for any Division for the reason that different grades of material enter into cars which are manufactured and sold by the General Motors Corporation, from $525.00 to $3500.00 or more. I feel that some Divisions use different grades of Carriage Bolts, Machine Bolts and other small parts, and I know that the Chevrolet Motor Company could not afford to use Cadillac or Buick specifications on these parts as it would work a hardship on them as far as price is concerned.

Non-productive material such as Taps, Dies, Drills, Reamers, Sand-Paper, Mazda Lamps, Coal, Pig Iron, etc. could be handled by the Advisory Staff as all Divisions of the General Motors use practically the same item in their plants.

If it is decided that all purchases of certain items should be made by the Purchase Section of the Advisory Staff, I believe the Purchasing Agents of the Cadillac Motor Co., Buick Motor Company, Olds Motor Works, Oakland Motor Car Company, and the Chevrolet Motor Company should meet with Mr. Main and discuss the concerns with whom he is thinking of doing business, regarding quality of material and whether or not they can take care of the combined General Motors on deliveries. There are certain companies who have been doing business with the Chevrolet Motor Company for years and we know they will take care of us to the detriment of others outside of the Corporation, for the reason that they prize our business very highly on account of the volume. I know that certain specifications that we have on certain products at the present time are entirely satisfactory to the Management, and we could not afford to go to a better specification if such were required by other Divisions in the Gneral Motors, as we cannot increase the price of products entering into Chevrolet cars at the price for which we are now selling same, vis. $525.00.

If it is decided that we are to operate through the Purchase Section of the Advisory Staff, I want you to know that I will co-operate to the fullest extent. The above comments are only made with the idea of placing the Chevrolet Motor Company in the right light before the Advisory Staff as our position, producing a low priced car at the rate of one thousand per day, is very different from the conditions which exist in other General Motors companies with manufacture higher-priced cars.

4522

D. P. O'KEEFE,
General Purchasing Agent.

Defendant's Exhibit (GM) No. 58

6725

CABLE ADDRESS "DELCOLIGHT." TELEGRAPHIC CODES WESTERN UNION A B C 5TH EDITION, LIEBER'S STANDARD

DELCO-LIGHT COMPANY

ELECTRIC LIGHT AND POWER PLANTS, WATER SYSTEMS
FRIGIDAIRE AND OTHER ELECTRIC DEVICES

DAYTON, OHIO, U.S.A.

DELCO-LIGHT COMPANY
DAYTON, OHIO U.S.A.
Subsidiary
General Motors Corporation

June 12, 1922.

General Motors Corporation,
Detroit, Michigan.

Attention - Mr. Alfred P. Sloan, Jr.

Dear Mr. Sloan:-

Your "Proposed Plan for Co-ordination of General Motors Purchases" has been studied by those members of our organization who would be affected or interested by it. Their remarks and criticisms have been used in writing the paragraphs which follow.

The unanimous opinion of this organization is that properly co-ordinated buying under the direction of one central head should result in considerable savings on purchase prices, securing uniformly high grade materials and also preference on deliveries.

From previous contact we have had with the General Motors and S.A.E. standards committees, we believe that you will find the Delco-Light Company one of the easiest of the subsidiaries to standardize in the way of material specifications. We owe this to the excellent assistance and cooperation we have had from the General Motors Laboratories at Moraine City in the development of our specifications.

You have asked us for criticisms and suggestions on the proposed co-ordination plan but, as we are not offering any solution for many of the questions which have occurred to us and as no doubt these same problems will be cleared up in the plan as revised by you, we are simply putting these questions down here as they occurred to us.

1. "Where a considerable proportion of the Corporations needs were . . . . concentrated with one source of supply."

4523

There's a satisfied user near you.

After a contract has been placed with one central source of supply for one particular material, how would the question of future orders to separate users be handled? With all chance of further competition eliminated, the possible tendency of the source of supply would be to favor the big user and pay little attention to the needs of the small user. What recourse would this latter consumer have to get attention if he cannot go to another source for better attention?

Another possibility under this heading is that this source of supply has allotted almost their entire normal output to a group of consumers. With an unexpected increase in orders to this source, their possible output will be exceeded so that one or maybe all of their customers will be slighted without the recourse to another source.

To prevent such a condition, will it not be necessary for the General Motors central office to be continually checking the volume of orders going to a source and determining that this source can still supply the entire amount as at the time the contract was let? With increased schedule requirements, who will have the authority as to where to place additional orders?

2. "Then the Purchasing Departments of each operation would, to all essential purposes, cease to contract for that particular commodity".

The question arises as to the possibilities of buying this material where it might occur that, owing to peculiar local conditions, a lower price than the contract price could be secured.

Then too, what could be done in an emergency where this same commodity could be purchased from a local or more available source of supply as a temporary or emergency measure? This, then, brings up the question as to what constitutes an emergency.

Many of the salesmen with whom we deal have become so much a part of our organization that they take a very personal interest in helping us out of the difficulties which are bound to show up. While we realize the value of large contracts from a money saving standpoint, we would regret losing the favoritism which is quite often shown us and which is very necessary in an organization which is trying to keep as low an inventory as we are.

3. "To obligate the Corporation to take a specific amount of material from any supplier".

Does this mean that the separate operating Divisions can be obligated to take a certain quantity of material as contracted for by the central Purchase Section?

The Delco-Light Company operates under a budget system of buying where we anticipate our needs for a four months period, and we believe that this is the longest time ahead for which we can correctly estimate. Will the placing of general contracts from a central office, and particularly those obligating a certain consumption, necessitate anticipating farther ahead than this four months period?

In order to adhere very closely to a "two months inventory", we have tried to select our various sources near to our factory for the purpose of securing quick deliveries. Would centralized buying require that we carry a larger stock of raw materials?

4. During the few years of developing Delco-Light products to their present high standard, the local foundries and manufacturers have been a great help to us in obtaining and maintaining first class castings, forgings and the like.

Representatives from these concerns are constantly in touch with us and at our service within several hours notice. This enables us to control this incoming material so closely that the producers are never unaware of our troubles. With products developing as rapidly as ours are and where so many Engineering changes are being made, this is very necessary to maintain a steady production.

We can readily see the advisability of obtaining standard parts from a central foundry or forge shop but we question losing the personal touch where special work is required.

The above paragraphs show briefly, without any attempt at a solution, the questions which have occurred to us. We will be interested in hearing further from you on this subject and we wish to assure you that you will have the whole hearted support of this organization in developing and sustaining such a system.

Yours very truly,

DELCO-LIGHT COMPANY,

R H Grant

General Manager.

RHG:MS

Defendant's Exhibit (GM) No. 59

6728

REMY

ELECTRIC DIVISION
GENERAL MOTORS CORPORATION
STARTING, - LIGHTING - IGNITION

FACTORIES & GENERAL OFFICES
ANDERSON, INDIANA
U S A

ADDRESS
MCO

June 27, 1922

Mr. A. P. Sloan, Jr.,
Vice President,
General Motors Corporation
New York City.

My dear Mr. Sloan:

While in Detroit recently I had a talk with Mr. Main in regard to the proposed co-ordination of General Motors purchases as outlined in your General Letter No. 25.

As outlined by Mr. Main, this covers the contracting of materials which are used by the majority of the General Motors Divisions, thus securing the best price due to the increased volume of material which can be contracted for.

I understand that Mr. Main does not contemplate making any contracts for materials which are special in nature to the various Divisions.

I believe that much good can be accomplished by such co-ordination of purchases and will be very glad to give the plan our thorough support.

Very truly yours,

L. J. Reuter
General Manager.

4526

IJR..DRP

Defendant's Exhibit (GM) No. 60

6729

OAKLAND MOTOR CAR COMPANY

DIVISION OF GENERAL MOTORS CORPORATION

AUTOMOBILE MANUFACTURERS

PONTIAC, MICHIGAN

Aug. 7th,
1 9 2 2.

Mr. A. P. Sloan, Jr., Vice President.
General Motors Corporation,
224 W. 57th St., N. Y.

Dear Mr. Sloan:

In answer to your General Letter #25 - Subject: "Proposed Plan for Co-ordination of General Motors Purchases"

After giving this considerable thought, I want to say that I am for the plan 100% - for the making of blanket contracts to be specified against by the various Divisions, for such standard materials as steel, iron, coal, coke, oils and greases, in other words, all material and supplies that are of a standard nature and used by all Divisions.

The products of the various General Motors Divisions are so varied, from the Cadillac to the Chevrolet, that in trying to centralize the purchases for such materials going into these products, I can see nothing but confusion.

It would seem to me that we could lay out a schedule covering a number of items which would show a good saving to the Corporation to contract for them from one source.

I am also enclosing herewith letter from our Purchasing Agent together with letter from our Comptroller on the same subject, which may be of interest to you.

Very truly yours,

Geo. H. Hannum

General Manager,
OAKLAND MOTOR CAR COMPANY,
Div. General Motors Corporation.

GHH
LMJ
CC - Mr. J. H. Main.

4527

OAKLAND MOTOR CAR COMPANY,
Div. General Motors Corporation.

6730

For the attention of Mr. G. H. Mannum. June 1st, 1922.

Relative to the plan for centralising General Motors purchases.

The question of price is not the only one that enters into successful buying. From experience which the General Motors had with a similar arrangement some years ago it was found that the advantage derived were offset by troubles encountered.

The ability to produce at the time the product can be marketed is of vital importance. If any plan can be worked out that does not endanger this and does not remove the responsibility for production from the shoulders of the Manufacturing Division and place it on that of an organisation outside of the factory it will merit careful consideration; it is found that any short comings in any particular unit can be charged and not successfully disputed to delays in securing material due to the fact that the centralized organisation has control of the supplier and does not rest with the factory. This will happen whether it is the true reason or not due to the fact that delays in securing material are frequent. There are so many elements entering into such a plan that about the only way to successfully argue against it is to urge its adoption as the troubles encountered in actual practice are more convincing than any written objections could possibly be.

The Ford Motor Company as organised cannot be used as a comparison their layout is much different than that of the General Motors.

The following contingencies, among others, should be considered.

Geographical location.

Changes in specifications. Changes frequently must be made and made quickly. This involves changes in price, disposition of fabricated material, new tools, speed in new production, etc.

Defective materials. Difference in opinion frequently arise when material is returned to supplier to be reworked. In case of dispute who will act as referee? How much will production suffer in the meantime?

Changes in schedule.

Materials satisfactory to one factory impossible for another due to difference in standards.

The whole problem hinges on loss of control by the factory over conditions which vitally effect it; it leaves the responsibility for the production with the factory and the authority covering the most important element entering into production under the control of others.

Signed - C. O. Miller.

PURCHASING AGENT
Oakland Motor Car Company
Div. General Motors Corporation.

COPY

Defendant's Exhibit (GM) No. 61

67732

GENERAL MOTORS CORPORATION

Date November 28, 1922.

No. 72.

Subject PURCHASE PLAN.

To General Managers of Divisions.
General Operating Officers.
Financial Officers.
Directors Advisory Staff Sections.

Copies for

Referring to my General Letter No. 25, dated May 8, 1922, at which time I submitted a Purchase Plan and asked for consideration to same, would advise that the matter has been gone over carefully by all Divisions and the Purchase Section of the Advisory Staff has contacted with all Divisions, and I believe there is a general feeling that the time has arrived when we should proceed more energetically in the direction outlined.

A number of suggestions have been developed and one fundamental change has been worked into the plan as a result of these suggestions, same being the placing of the responsibility of the work in the hands of a Purchase Committee representing all phases of the Corporation's activities, which will function for the purpose of coordinating and capitalizing the large amount of experience, knowledge and ability among the various Divisions. A revised plan is submitted herewith embodying the above additional feature. In view of the fact that this change while somewhat fundamental will, I am sure, be subscribed to by all, it has been decided to go ahead without further delay. The President will appoint, in due course, the Committee referred to.

4530

The plan as outlined, will necessarily be modified from time to time as experience is gained. In order that the time of the members of the Committee may be conserved, all communications, including suggestions or criticisms, should be directed to the Secretary.

Very truly yours,

Alfred P. Sloan, Jr.
Vice President.

A.P.S.Jr./K

NOTE: Signature of Alfred P. Sloan Jr. appears after "Very truly yours,".

Defendant's Exhibit (GM) No. 62

6734

PLAN FOR CO-ORDINATION

OF

GENERAL MOTORS PURCHASES.

4532

Corrected to Dec. 1, 1923

6735

GENERAL MOTORS CORPORATION
PLAN OF CO-ORDINATION
OF PURCHASES

I think that it will be generally recognized that the purchasing power of the General Motors Corporation as an institution has never been capitalized to the extent that it might have been or must necessarily be in the final analysis. This comes about through various reasons which need not be discussed here.

I believe it will be equally recognized that it is of substantial advantage to the Corporation to adopt some such plan. I am not in a position to state what saving would thus accrue to the Corporation. This would require quite a study and I do not know as there would be any particular advantage in having such a study made because it is so very obvious that the saving would be very large and well worth any expense incidental to same. My own viewpoint, based upon such rough figures as I have gone over, indicates a saving in a normal year's operation of not less than $5,000,000 and I would not be surprised if this even reached as much as $10,000,000. The Director of the Purchase Section, Advisory Staff, advises me that he feels that proper co-ordination of purchases on a suitable plan would result in savings all the way from 10% to 20%. I feel that this is entirely possible. In any event, we all agree I am sure, that the savings are sufficient to justify us in testing out such a plan. It must be recognized that at the present time considerable quantities of our purchases, such as tires and to some extent our steel requirements and closed bodies, are co-ordinated so far as practical purposes are concerned and that these items would undoubtedly not be affected by any plan that could be developed.

Better prices would come about, as I see it, in perfectly logical and economic ways. The concentration of our purchasing power naturally means quantity and quantity means better prices. There are also other advantages that I can see. It may be possible to take such a large percentage of the output of an institution through concentration, that marked economies could be effected in the operation of that institution in which economies we would properly participate. The Ford Motor Company has very successfully capitalized its enormous purchasing power in this direction. A large volume of assured business to any manufacturer justifies the lowest possible price - even approaching cost - for the reason that the maintenance of the organization is assured and the balance of the business being smaller in volume, can easily be made to pay a return on the whole investment without an excessive sales price for the overhead is taken care of by a substantial volume of business such as one institution, like General Motors, can offer. This is particularly

4533

true, I believe, in times like these where the necessity of keeping the organization intact and the absorption of the overhead is the big problem that the manufacturer must face. Still again, a large volume means that a supplier properly identified with us can do many things to reduce cost of production which he can not afford to do if the business comes in small volume and the duration of it is uncertain. The proper co-ordination of purchasing and standardization should result in a smaller number of sizes. It also means ability of one Division to help out another in an emergency and ability to use materials of both raw and expense character in other Divisions if one Division, through changes or otherwise, is no longer able to use same. It should also enable inventories to be kept at a minimum on account of quicker service on the part of suppliers who are furnishing the same thing to many Divisions and even the still further reduction of inventories by forcing suppliers to whom we are giving valuable business, to keep storehouses or points of contact with our Divisions available with supplies on hand to be taken as needed. In still other instances it should result in a better product. We all know how difficult it is in certain steels to obtain the right specifications, particularly when we are dealing with heat treatments. Co-ordination of such purchases should result in the high heats being taken by the Division requiring them; the lower heats likewise to the end that both Divisions profit and a better product results. In one instance in my experience I was able for years at a time to maintain carbons within five points by an arrangement like this. All the above are reasons outside of the principal one of a greater volume that will surely result in a more effective handling of the Corporation's business by a proper co-ordination of its purchasing power.

I feel further that the placing of specifications at certain times of the year and the most propitious time will result in our being able to take advantage of a better market and a greater appreciation of General Motors purchasing power on the part of large suppliers of raw material. I do not think it will be necessary to elaborate further on the tremendous advantages accruing to the Corporation by all these and many other factors.

THE PROBLEM PRESENTED.

The question of co-ordinating purchases may seem to be comparatively simple, but when one considers the extremely technical character of practically all the Corporation's products and recognizes that we are dealing with many personalities and viewpoints developed through years of contact with certain products as compared with others, the problem naturally becomes one of greater complication. There are articles that the Corporation uses that are of such a technical character that in order to get proper co-ordination a general agreement is essential that any specific article will be satisfactory for all and perform its functions as well, if not better than any of the various products for which it is to be substituted. The problem, therefore, might be divided into two steps:-

(a) To co-ordinate the different viewpoints into an agreement or specification as to what will satisfactorily answer the purposes of all,

and

(b) To develop a contract, all the conditions of which, price, terms, deliveries, etc. will be the best that can possibly be obtained.

Dealing with "a" it is believed that the co-ordination and agreement as to the specification will present the hardest part of the problem and must be taken up and can only be taken up one item at a time and each thrashed out individually. Naturally, some items will require more consideration than others; some hardly any at all.

Aside from the necessary consideration from the technical standpoint of each of these items, there comes the very important consideration of what might be called the psychology of the situation. I mean by this, the determination of the actual facts in each case as distinguished from the perfectly natural hesitancy of making any change which always exists in dealing with any product and organization which has given successful service for a long term of years. It is difficult, dealing with many different personalities in a large organization, to recognize that a different article may give equally good, if not better, satisfaction. There is no question, however, but what all these and many other points that need not be mentioned, can and will be readily overcome if there is underlying the whole plan a recognition of the fundamental advantages accruing to the Corporation by standardization and the co-ordinated purchase of such materials as can properly be co-ordinated.

Dealing with "b" it is not believed that any great difficulty arises. It is simply a question of obtaining the best price possible and developing a plan that accomplishes that result in the most feasible manner. With "a" taken care of "b" becomes more or less a matter of routine.

ONE PLAN THAT APPEARS PRACTICAL.

Having reached the conclusion that the co-ordination of purchases will result in benefit to the Corporation, and having set forth some of the factors involved in the problem presented, I have attempted to fit a plan into the present Corporation's organization, making as few changes and involving as little additional expense as is necessary to obtain the required result. I have also attempted, in the development of this plan, to recognize the fundamental principle that there is a tremendous amount of ability and experience in the Purchasing Departments of the different Divisions and Subsidiaries which should and must be capitalized to the good of the Corporation as a whole and if the best efforts of each and every individual Purchasing Agent can be co-ordinated, great benefit to the Corporation must necessarily result therefrom. I believe that the simplest way to present the subject is to define the duties of those parts of the organization as may be affected by the application of this particular proposition.

Before doing so, it must be fully recognized that in outlining any plan such as this, only the first steps should be taken and these should be subject to revision and perhaps entirely changed as experience develops. The main object of presenting the following ideas is to effect a starting point, feeling confident that with a proper start those best qualified can work out the procedure in detail.

GENERAL PURCHASING COMMITTEE

After very mature deliberation and having in mind the basis of the General Motors Plan of Organization, I am thoroughly convinced that the responsibility for the co-ordination of General Motors purchases should lie in what I will term a General Purchasing Committee and that this Committee should be charged with the responsibility of initiating the necessary procedure and developing all advantages to the Corporation that naturally flow from this particular proposition. The General Purchasing Committee should be appointed by the President and be representative of all phases of the Corporation's activities. In addition to this, consideration should be given to geographical location and the necessity of contacting with all the different types of purchases in order that the findings of the Committee should be truly representative and carry weight with the Corporation at large. It is my idea that any position taken by the General Purchasing Committee should be largely final so far as dealing with individual items and procedure are concerned, the Committee being founded on the broad principle set forth in this program. In the event that action becomes desirable but is within the province of some other authority, any recommendation of the Committee should and would carry great weight and would usually be approved as representing the best sentiment of the Corporation as a whole. The Committee should have regular meetings at predetermined intervals. All questions of policy and procedure should be brought before and determined by the Committee. The relations between the Committee and the Purchase Section of the Advisory Staff would be those of principal and agent. The Purchase Section would carry out the procedure and policies established by the Committee and would only enter into such contracts as were formally approved by the Committee. The members of the Committee are charged with a real Corporation responsibility and should do everything possible to discharge that responsibility as members of the General Motors Corporation. Purchasing Agents of Divisions and Subsidiaries, not represented on the Committee, should at all times be welcome at the meetings and while they would necessarily have no vote in determining policies, their viewpoints, suggestions and criticisms should always be considered. It would be the duty of everyone in the entire organization having any viewpoints to express, to submit same preferably by appearing at any meeting of the Committee or by writing to same. Communications relative to any action of the Committee, be it in the shape of criticism, suggestion or anything else, should be addressed to the Secretary and should be given prompt consideration.

To sum up the whole plan, so far as the General Purchasing Committee is concerned, it is recognized that no Committee can function in an administrative way. Nevertheless a Committee of this character in a large organization, is essential for the purpose of co-ordination and capitalizing all the ability and experience that lies within the organization. It is therefore believed that such a plan will bring to the support of the program the best thought in this particular line that exists throughout the entire Corporation.

Duties of Director of Purchase Section, Advisory Staff. The relations of the Director of the Purchase Section, Advisory Staff, to the General Purchasing Committee are, as before stated, that of principal and agent. The Director of the Purchase Section is the administrative agent of the General Purchasing Committee. It is one of the duties of the Purchase Section to develop a list of articles in which co-ordination would be possible and profitable. The responsibility of initiative is lodged definitely with the Purchase Section, but nevertheless it does not relieve the members of the General Purchasing Committee from bringing up any matters which would result in increasing the effectiveness of the plan as a whole. The General Purchasing Committee has no power of administration. It looks to the Purchase Section for that function. It would be also the duty of the Purchase Section to maintain the necessary contact both personally and otherwise with the Purchasing Departments of each Division and Subsidiary in order to develop the necessary data upon which recommendations to the General Purchasing Committee would be based. It would further be the responsibility of the Purchase Section to secure the necessary co-ordination from other Staff Sections. In other words, the Purchase Section through its Director and organization would act as an administrative agent carrying out the policies and rulings of the General Purchasing Committee which could not effectively, as before stated, function in an administrative way.

Duties of Other Advisory Staff Sections. It would be the duty of other Sections of the Advisory Staff to co-operate with the Purchase Section in the development of the necessary specifications, as before outlined, to the end that the viewpoints of the different Divisions were properly co-ordinated into one set of specifications that would be acceptable for all. All such specifications would be passed upon by the General Purchasing Committee. It would, for instance, be the duty of the Manufacturing Section when called upon by the General Purchasing Committee or through its agents, the Director of the Purchase Section, to contact with the Divisions to the end that an agreement is effected as to what constitutes proper specifications for the particular article in question to the end that a definite, concrete proposition upon which a contract could be properly based and submitted to the General Purchasing Committee for action, can be developed.

6740

One of the most important duties of other Advisory Staff Sections and of the Financial Staff would be to determine that the proposed source of supply was a proper one, both from the standpoint of financial facilities and personnel, to properly assume any obligation that the General Purchasing Committee might feel warranted in recommending be placed with such supplier. This would particularly apply where a considerable proportion of the Corporation's needs were, for the sake of reasons set forth in this program, concentrated with one source of supply or a limited number of such sources.

Duties of General Executive Officers. With the responsibility for the whole program lodged with the General Purchasing Committee representing all phases of the Corporation's operations as well as its general administrative side, it is thoroughly believed that all Operations recognizing as they must the tremendous advantages accruing to the Corporation, will in all cases accept the decisions of such Committee.

I think the above outlines the application of the proposed plan to the organization as it now stands. I believe further that it is in accordance with the broad foundation of the General Motors type of organization. It might be noted that it is not believed that the duties of theGeneral Purchasing Committee would constitute a sufficient draft on the members time to in any way handicap their routine work with their particular Division.

METHOD OF PROCEDURE.

To illustrate further the application of the above, the procedure in any individual case would be substantially as follows:

1. Either the Director of the Purchase Section and that Section would be charged with that responsibility, or any member of the General Purchasing Committee or any member of the organization attending any meetings of the Committee could suggest any article, such as leather belting, as a desirable one to be co-ordinated and contracted for in quantity, believing that a better price and other advantages would flow from such co-ordination. If any action was taken it must be by the General Purchasing Committee. That Committee might decide that the moment was not opportune to deal with that particular article. It might, on the other hand, feel that a general contract could be negotiated without further formality. On the other hand, it might direct that on account of a possible difference of opinion among the Operating Divisons as to what constitutes leather belting, that some other Section of the Advisory Staff should develop a proper specification.

4538

2. If a detailed specification was essential some Section of the Advisory Staff, say the Manufacturing Staff, would take the matter up and would contact with the proper department in each Division or Subsidiary and work out a specification which would be reported to the General Purchasing Committee through the Purchase Section.

3. Having agreed that the purchase of this particular article should be co-ordinated, the General Purchasing Committee would direct that the Purchase Section, through its Director, should develop a contract. This should preferably be done through the Director of the Purchase Section asking every Purchasing Agent throughout the Corporation to submit to him the best proposition that he could obtain on the standard specifications, such proposition predicated upon his particular requirements, not on the requirements of the Corporation as a whole. The Director of the Purchase Section would obtain corresponding data on the basis of the Corporation's requirements as a whole. A complete report covering the entire data so developed would be submitted to the General Purchasing Committee for action. It would be within the province of that Committee to instruct the Purchase Section to enter into such contract as its judgment seemed advisable or to make such recommendations to such other authority as was necessary. This procedure insures all sources of supply contacting an opportunity to present the best proposition possible and it should be recognised by all Operations that a result so obtained should be the best possible.

4. The General Purchasing Committee might find it advisable to delegate one of its members or a sub-committee of same or the Purchasing Agent of some other Division or Subsidiary, not a member, as the best source of dealing for the Corporation as a whole when in its judgment any particular individual is best qualified to handle any particular matter. Any individual or group so designated would for that purpose function as a part of the Purchase Section.

5. Contracts entered into by the Purchase Section through authority of the General Purchasing Committee would become items exclusively contracted for by the Corporation itself and the Purchasing Agents of the various Subsidiaries would no longer contract for those particular items. It would be their duty to adopt the general contract so authorised with all the terms and conditions specified therein.

6. All Operations would use such contracts as a general contract; would place orders against same; would liquidate the indebtedness caused by these purchases on their own account in the usual manner. It would make

absolutely no difference in the functioning of the Purchasing Departments of any Operation except that the initial placing of the contract through the necessity of co-ordination was removed from their province and became the sole duty and responsibility of the General Purchasing Committee.

7. In the case of contracts calling for rebates for the purpose of protecting prices or for any other purpose, such rebates should be handled by the Purchase Section, Advisory Staff, so far as records are concerned. All such rebates should be credited through the General Office to the Operations entitled to same at the end of each month, not specifically but as a general sum. This would mean that each Operation would get the benefit of the Corporation price and further, that the initial billing would be the lowest possible price that any Operation individually was able to obtain. This procedure is considered desirable because to get the benefit of the lowest possible price objections are some times made on the part of suppliers in disclosing that price. While this method would, to a certain extent, develop an incorrect cost of sales, the errors would be very small and it is believed preferable to deal in this manner than with each individual item separately. In the event that the price made to the Corporation on any special contract was no lower than the best price accorded any Operation, the Purchase Section, Advisory Staff, would have no duty to perform after having effected the contract in question.

8. In the event that it was necessary in order to secure the lowest possible price or any other favorable terms, to obligate the Corporation to take a specific amount of material from any supplier, contracts could only be entered into on the recommendation of the General Purchasing Committee and with the approval of the Finance Committee due to regulations adopted by that Committee. In the event, however, that such contracts call for an obligation, limited by a certain percentage of the Corporation's purchases without involving quantity, action on the part of the General Purchasing Committee will be all that would be necessary to authorize the Director of the Purchase Section to effect such contract.

9. One of the most important considerations that not only the General Purchasing Committee and the Purchase Section, Advisory Staff, but other Staff Sections co-operating with same must determine is the ability of a

source of supply to assume an obligation that might be placed with such source, having in mind the ability of that source to comply with delivered requirements. Manifestly, it is essential in order to capitalize to the fullest possible extent the Corporation's purchasing power, all as outlined in this program, that same should be centralized in a limited number of places and in as big units as possible and conversely, it must be recognized that in capitalising the purchasing power in that manner, a liability is created to the degree that the supplier assuming the obligation may not be able to comply with same. In such a contingency the Corporation would be placed in a position where it would have to go on the market and purchase large quantities of material at a time perhaps when the market had considerably advanced, being penalized to that degree, but more important yet it might have difficulty in obtaining the necessary supplies at short notice and when suppliers were well filled up with specifications from other manufacturers and in that way its entire manufacturing program might be jeopardized with a loss many times greater than would be saved. It is manifestly impossible to lay down any fixed rule for the liability thus created could only be determined in each individual case and would be a summation of many factors such as nature of the material, number of sources of supply available, and innumerable others that would be unnecessary to mention. This phase of the program should be carefully considered by the General Purchasing Committee as well as the Purchase Section and other Sections as it is from standpoints more important than the contract price and the greatest care should be exercised. The General Purchasing Committee should recognize the experience of each and every Division having experience perhaps extending over years with one supplier and another to the end that the Corporation's interest is protected to the fullest possible extent.

I again repeat, for emphasis, that the procedure outlined above is purely tentative and is simply to effect a starting point. The ultimate program may be entirely different. There may not be a single suggestion above that will ultimately be found to be the best. I feel confident however, that the above presents a start in the right direction and that the Corporation can safely leave it to the combined experience and ability of the members of the Committee to work out such a procedure that will most effectively capitalize the Corporation's position in the purchasing of its materials.

Alfred P. Sloan, Jr.,
Vice President.

4541

Defendant's Exhibit (GM) No. 63

GENERAL MOTORS CORPORATION 6744

DATE November 29, 1922.

NO. 73.

SUBJECT **PURCHASE PROCEDURE - GENERAL PURCHASING COMMITTEE.**

TO
General Managers of Divisions.
General Operating Officers.
Financial Officers.
Directors Advisory Staff Sections.

COPIES FOR

In accordance with the General Purchase Plan, the following Committee has been designated by the President to act as the General Purchasing Committee:-

G. G. Allen, Purchasing Agent, Buick Motor Co., Flint, Mich.
H. L. Barton, Director Manufacturing Section, Advisory Staff, Detroit, Mich.
W. S. Cromer, Purchasing Agent, Dayton Eng. Lab. Co., Dayton, Ohio.
D. F. Hulgrave, Purchasing Agent, Cadillac Motor Car Co., Detroit, Mich.
W. A. Kimball, Purchasing Agent, New Departure Mfg. Co., Bristol, Conn.
J. H. Main, Director Purchase Section, Advisory Staff, Detroit, Mich.
C. S. Mott, Vice President, Detroit, Mich.
D. P. O'Keefe, Purchasing Agent, Chevrolet Motor Co., Detroit, Michigan.
J. L. Pratt, Vice President, New York.
Alfred P. Sloan, Jr., Vice President, New York - Chairman.
James Lynah, Asst. Director Purchase Section, Advisory Staff, Detroit, Mich.- Secretary.

Very truly yours,

A.P.S.Jr./K

V I C E · P R E S I D E N T.

4542

Defendant's Exhibit (GM) No. 64

6745

March 10, 1924.

To: Executive Committee.

From: Alfred P. Sloan, Jr.

Subject:— Matter of General Purchasing Committee.

I stated in my report to the Executive Committee dealing with the budget, that when another year came around I hoped to be able to present, concurrent with the budget, a full report covering the activities of the organization with particular reference to submitting a definite measure of what had been accomplished. As we get into the matter we find it is going to be quite difficult to definitely establish, either from a profit or from any other standpoint except in more or less generalities, the justification of each item of expense, but we will be able to show in a limited number of instances that we have been able to save enough to cover the whole expense which ought, of course, to be satisfactory.

At the Purchasing Committee meeting a few days ago two very interesting exhibits came up as to what that particular Committee has accomplished and I thought as a matter of general information it might be well to submit them at this time. They are as follows:—

1. *Contract with V. O. Smith Company.* This contract had something like one and a half to two years to run at the time we started to discuss the matter. It appeared from an analysis of the contract that the equities on both sides were well preserved, but still we thought that in view of the large increase in our business we perhaps ought to see if something better could not be obtained through a modification of the contract at this time. The result of this is shown in the letter, copy of which is attached hereto, from which you will note that there is a total saving of something

4543

like $500,000.00. Understand, this is simply from September 1, 1923 to July 1, 1924. It is unquestionably a fact that if it had not been for the activities of this Committee this matter would not have been taken up in this way with the resultant saving.

—2—

2. *Contract between the Corporation and the Electric Storage Battery Company of Philadelphia.* This was taken up in a similar manner to the above and it being, of course, a cost plus contract, we were able to make a reduction in the amount of profit which mean, against our purchases for 1924, an estimated saving of $125,000.00.

The above two instances represent an estimated saving of $625,000.00.

Respectfully submitted,

A.P.S.Jr./K
att.

Defendant's Exhibit (GM) No. 65

6747

(GM)

December 1, 1924.

Members of
General Purchasing Committee.

The activities of the General Purchasing Committee have now extended over a period of two years. I do not know what the feeling is individually on the part of the members of the Committee as to the results that have been obtained and can be obtained as we go along and learn to do things better, but so far as I am concerned I feel that a great deal has been accomplished and a great deal more can be accomplished and will be accomplished as we progress.

From the Corporation standpoint, however, I feel that I should say to the members of the Committee that its activities have, as I see the picture, resulted far more fundamentally than would be apparent from the surface. What I mean by this is, that it has shown the way or what I believe to be the way of co-ordinating to the stockholder's benefit the functional activities of our different Operating Divisions without in any sense taking away from those Divisions the responsibility of their individual activities. In other words, expressed otherwise, I feel that in all our functional activities like purchasing, manufacturing, engineering and sales, a great deal can be accomplished by proper co-ordination and, in my judgment, it is only a question of time when the development of the automotive industry will force us, due to the economics of the future picture, into just such things. The General Purchasing Committee has, I believe, shown the way and has demonstrated that those responsible for each functional activity

4545

can work together to their own profit and to the profit of the stockholders at the same time and such a plan of co-ordination is far better from every standpoint than trying to inject it into the operations from some central activity.

The above is so much in my mind that I thought I would like to tell you about it and also to say that due to the necessities of developing other activities of this kind I am going to ask Mr. John L. Pratt, in whom all of you I know have tremendous confidence, to act as Chairman of the General Purchasing Committee in place of myself. I have enjoyed the meetings and particularly enjoyed the closer contact with the members of the Committee. I do not purpose in any way to separate myself from its activities but must be

relieved of the necessity of attending every meeting for reasons above noted although I will be there whenever I possibly can.

Mr. Pratt, as you know, is a member of our Executive Committee, thoroughly in touch with everything that goes on and he can speak with just as much authority as I can and I am sure can be more helpful.

Very truly yours,

APSJr./K

NOTE. The handwritten initials "A N" appear at the top of the first page.

Defendant's Exhibit (GM) No. 66

COPY

S.B.

6749

December 10, 1937.

Mr. W. F. Ingals, President,
Central Tube Company,
First National Bank Bldg.,
Pittsburgh, Pa.

RE: STOCKHOLDER RELATIONSHIPS - COMMENTS

My dear Mr. Ingals:-

I acknowledge receipt of your letter of November 30th, and have carefully noted contents of same.

The point you make I take it is, that you feel, in view of the fact that you are interested in us, that we should be interested with you to the extent of giving you an opportunity of quoting on such products as you manufacture, that we use.

Perhaps I am right, and perhaps I am wrong - I do not know, but would go farther and say that you ought to have every right and every opportunity, as an established and reputable manufacturer, to quote on such products that you make and we use - whether a stockholder or not.

I will take the matter up immediately with Mr. Knudsen; lay the facts before him, and am sure you will hear from him directly or indirectly to that effect, in due course.

I make the distinction between the two situations because I feel that if your Company and its officers, have sufficient confidence in General Motors Corporation to become stockholders, that you should do so solely on the merits because you believe in the institution, its management and its opportunity and that, on the other hand, our responsibility is to give every responsible manufacturer a chance to figure on such of their products as we use, all of course within reason, and giving consideration to the various factors involved. In other words, frankly, I think that each instance should stand on its own foundation, and it is better for them both to keep them separate. I hope you will agree with this.

Very truly yours,

Chairman.

4547

Defendant's Exhibit (GM) No. 47

6750

Mr. Wm. S. Knudsen,
President — Detroit, Michigan.

A. P. Sloan, Jr. — New York.

STOCKHOLDER RELATIONS—SUGGESTIONS
CENTRAL TUBE COMPANY

December 10, 1937.

My dear Bill:—

I attach copy of letter from W. F. Ingals, President of the above Company, together with copy of my reply.

I think you will agree with me that these people ought to have an opportunity to bid on such of our goods as they manufacture, all things of course, being equal.

I do not know as I recall what your position is on this question of reciprocity, but I think it is much safer and better to have each transaction stand on its own foundation, because if we go into reciprocity, sooner or later the business is not done on a firm foundation of fact and equity, but more on the foundation of influence, which is not an efficient or scientific approach to the problem, as we say.

Very truly yours,

APSJr./K
att.

NOTE. Just above word "letter" in first line appears a checkmark and date 11-30-37. A checkmark also appears above word "reply" at end of first sentence.

4548

Defendant's Exhibit (GM) No. 68

6751

GENERAL MOTORS CORPORATION

Excerpt from Minutes of Meeting No. 18 of General Purchasing Committee held July 2, 1924.

Meeting called to order by Mr. Sloan.

(b) Reciprocity.

Letter of April 30 from Mr. G. H. Kerr of the DuPont Company to Mr. Sloan suggesting advantages to be gained through tabulating the suppliers to and the quantities of purchases made by General Motors Divisions for use in securing sales on a reciprocity basis was read. A discussion of this matter emphasized the fact that the products of our business go largely to individuals. While it is recognized that there are cases which might be profitably dealt with on the reciprocity basis, there are so many complications and difficulties involved in attempting to treat the situation as a whole, it was agreed best to stand on our own equities and require our suppliers to do so. Divisions of course are at liberty to treat individually such cases as any situation might require.

4549

Defendant's Exhibit (GM) No. 69

6752

(GM)

Letterhead of
SAMSON TRACTOR COMPANY
JANESVILLE, WISCONSIN

January 7—1922

Mr. A. P. Sloan Jr., Vice Pres.,
General Motors Corporation,
224 West 57th Street,
New York City

Dear Mr. Sloan:

Our Branch Manager at Minneapolis has sold to the E. I. duPont deNemours & Co., Hartley Building, Duluth, Minnesota five (5) Three-quarter ton Samson Trucks for immediate delivery subject to the O. K. of the home office at Wilmington.

As I understand it, the du Pont office at Duluth may suggest a preference for a certain truck but the home office at Wilmington can buy or ship them any truck that they deem advisable.

It seems that Mr. Orr, the Manager of the du Ponts at Duluth, is very anxious to get the Samson Trucks and, as you know, we need the business. Therefore I was just wondering it you knew any way to influence the home office at Wilmington to O. K. the preference of their branch manager at Duluth. If you can do anything on this I certainly will appreciate it.

Very truly yours,

/s/ H. M. CRAIG
Acting General Sales Manager

HMC—D

NOTE. At top is stamp "Received Jan—9 1922 A. P. Sloan, Jr.

4559

Defendant's Exhibit (GM) No. 70

6753

January 13, 1922.

Mr. Irenee duPont,
Wilmington, Delaware.

My dear Mr. duPont:—

I am enclosing herewith copy of a letter received from our Samson Tractor Division, which is self-explanatory. Anything you can properly do in connection with the matter will be greatly appreciated.

Very truly yours,

b/k VICE PRESIDENT
Enc.

4551

Defendant's Exhibit (GM) No. 71

6754

August 2, 1922

To: Executive Committee, General Motors Corporation, Mr. L. R. Beardslee, Secretary

From: General Motors Research Corporation

Subject: REPORT OF THE RESEARCH LABORATORIES FOR THE MONTH OF JULY

* * *

FUEL RESEARCH SECTION:

The month's efforts have been confined to semi-works production of lead tetra-ethyl. The entire process has been studied intensively, to eliminate cost. The duPont organization has been brought into the work and they have duplicated our semi-works production very readily. Just now, we are counting upon the duPont organization to collaborate with us on this new compound. This is the logical procedure, due to the fact that they have equipment and floor space suitable for this kind of work. The question of stability has been satisfactorily solved. Some of the other difficulties encountered, such as corrosion of spark plugs, are being very carefully considered. The results obtained during the month show reasonable progress.

* * *

Respectfully yours,

F. O. CLEMENTS
Director of Research

4552

I hereby certify that the foregoing is a true excerpt from a report entitled "Report of the Research Laboratories for the Month of July" from General Motors Research Corporation to the Executive Committee, General Motors Corporation, dated August 2, 1922.

J C Davidson

J. C. Davidson
Assistant Secretary
General Motors Corporation

May 18, 1951

NOTE: Italics indicate handwriting.

Defendant's Exhibit (GM) No. 72

DUPONT

E.I. Du Pont De Nemours & Co.

6756

Dyestuffs Department,
Wilmington, Delaware.

September 12, 1922.

Mr. C. F. Kettering,
General Motors Corporation,
Dayton, Ohio.

Dear Mr. Kettering:-

Certain little kinks in the manufacture of Tetra Ethyl Lead have enabled us to secure a yield in the laboratory of over 85% with the Ethyl Bromide Method. The kink, I think, is a clever one, and one which I want to explain to you at the very first opportunity following the complete proof in our laboratory and semi-works.

COPY

It is our feeling that the whole Tetra Ethyl Lead manufacturing process should, insofar as possible, be protected by patent, but before doing anything of this character I felt it was entirely necessary that the subject be discussed with you, - therefore my telephone conversation with you this morning.

I feel that we are getting along very well with the manufacture of Tetra Ethyl Lead. We have now the process sufficiently in hand so that we are studying very dilligently the subject of material cost and apparatus suitable for the manufacture, upon call from you, of substantial quantities of this product.

Very truly yours,

(Signed) W. F. Harrington

WFH-M

Assistant General Manager.

4554 E

Defendant's Exhibit (GM) No. 73

6757

October 3, 1922

To: Executive Committee, General Motors Corporation,
L. R. Boardslee, Sec'y.

From: General Motors Research Corporation

Subject: REPORT OF RESEARCH LABORATORIES FOR MONTH OF SEPTEMBER

* * *

FUEL RESEARCH SECTION:

In a number of our previous reports, we have called attention to some difficulties that have arisen in connection with the antiknock program. These difficulties have had to do with corrosion of spark plug electrodes and a certain separation of lead in the combustion that causes valves to stick up or improperly seat. Most of the work of the Department here in Dayton, during the past few weeks, has been devoted to the correction of these difficulties.

No new thing was ever developed that did not present complications; especially, from the standpoint of interpreting it into production or utilization.

We are putting forth every effort to correct these difficulties and do not anticipate any particularly long drawn out trouble in so doing.

The Semi-Works preparation of tetraethyl, has been left to the duPont Company, who are operating at their Dye Works plant. They have succeeded with their part of the problem in a very admirable manner. The yields obtained are within 85 to 90% of theory, which is exceptionally good. The duPont Laboratory is to be congratulated upon this result.

* * *

Respectfully yours,

F. O. CLEMENTS 4555

Director of Research.

6758

I hereby certify that the foregoing is a true excerpt from a report entitled "Report of Research Laboratories for Month of September" from General Motors Research Corporation to the Executive Committee, General Motors Corporation, dated October 3, 1922.

J. C. Davidson
Assistant Secretary
General Motors Corporation

May 18, 1951

4556

Defendant's Exhibit (GM) No. 74

6759

GENERAL MOTORS CORPORATION

DETROIT, MICHIGAN

Sept. 27, 1922.

Mr. J. W. Morrison,
Delco Light Company,
Dayton, Ohio.

My dear Mr. Morrison:

I did not hear anything from Mr. Sloan about the proposed trip to Wilmington until today when he called me up to say that he desired us to be in Wilmington on next Wednesday morning, October 4th; that he thought it would be necessary to spend about two days there and then close the matter at New York in his office on Friday, at which interview he expected Mr. Kettering would be present.

I am therefore going to ask you to meet me at the office of Irenee duPont, duPont Building, Wilmington, Wednesday morning as near 9 o'clock as possible. Of course bring with you everything you feel will be of service.

I trust by this time you have received such satisfactory reports as to Mrs. Morrison's condition as to relieve your anxiety. If however for any reason you feel it might be inadvisable for you to be away next week, do not hesitate to say so.

Yours very truly,

James M Emery

JLcE:G

4557

Defendant's Exhibit (GM) No. 75

6760

WESTERN UNION TELEGRAM

March 29, 1923.

Mr. W. F. Harrington,
Assistant General Manager,
E. I. duPont deNemours & Company,
Wilmington, Delaware.

It was officially decided this morning to go ahead with the antiknock program as rapidly as possible. (Stop) Consequently this constitutes official notification that you are to get out one hundred gallons of tetraethyl lead per day as soon as possible. (Stop) Expect to see you Monday afternoon next week.

Midgley

NOTE: "COPY" overscored and underscored is typed across telegram; a check mark appears in left margin beside first line of message.

4558

E

Defendant's Exhibit (GM) No. 76

AGREEMENT BETWEEN

GENERAL MOTORS CHEMICAL COMPANY

AND

STANDARD OIL COMPANY (OF INDIANA).

6761

THIS AGREEMENT made this 29th day of September 1923, between General Motors Chemical Company, a corporation organized and existing under the laws of the State of Delaware, having its principal offices at the City of Dayton, State of Ohio, hereinafter termed "Seller", and STANDARD OIL COMPANY, a corporation organized and existing under the laws of the State of Indiana, having its principal offices at the City of Whiting, State of Indiana, hereinafter termed "Buyer".

WHEREAS, the Seller has been and is now engaged in devising and developing certain materials to be mixed with the fuel (gasoline, kerosene or other motor fuel) for internal combustion engines, the object of such admixture being to render such fuel non-knocking, and thereby make it possible to use higher compression pressures in such engines without producing the detonation commonly known as "knocking", and with the further advantage of increasing the power output of said engines with attendant economy in fuel consumption, and

WHEREAS, the Seller represents that the preferred material thus far developed for such admixture is an organic compound known as "tetra-ethyl lead", and

WHEREAS, the Seller represents that when tetra-ethyl lead is mixed in certain proportions of less than one-tenth of one per cent (1/10 of 1%) by volume with a straight run distillate consisting of only paraffin hydrocarbons and just conforming to the

4559

"New Navy" Specifications for gasoline now in force, there is produced a motor fuel suitable for use in motors of sufficiently higher compression to warrant their general adoption, and which may be described as a non-knocking fuel equal in this property to a mixture of sixty per cent (60%) of the original fuel plus forty per cent (40%) Benzene (Benzol) and

WHEREAS, the Seller represents that it has discovered the necessary additions in the way of other materials or compounds necessary to prevent certain harmful secondary effects attendant upon the use of tetra-ethyl lead, the mixture of said materials or compounds with said tetra-ethyl lead constituting the mixture hereinafter referred to as "anti-knock mixture", and

WHEREAS, the Buyer represents that it is engaged in the business of selling gasoline to the public, and is now selling and intends to sell during the continuance of this agreement a gasoline which is a sufficient improvement in non-knocking characteristics over the straight run distillate hereinbefore described so that it requires a lesser quantity of tetra-ethyl lead to produce a satisfactory non-knocking fuel for use in the aforementioned higher compression motors. The Buyer further represents that it is desirous of selling to the public a gasoline of its own manufacture which will in non-knocking characteristics be equivalent to 60% of the hereinbefore described straight run distillate plus 40% benzene (benzol) and that if the said anti-knock mixture will enable the buyer to accomplish such purpose it is willing to purchase the same from the Seller in accordance with and subject to the hereinafter expressed terms and conditions.

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NOW THEREFORE, this agreement witnesseth that in con-

sideration of the premises and of the covenants and agreements hereinafter set forth the said parties hereby agree as follows:

1.

The Seller agrees to furnish the Buyer exclusively, except as hereinafter provided, during the period of eighteen months from the 1st day of October, 1923, with such quantity of anti-knock mixture as may be reasonably required by it in the territory in which Buyer operates and which territory shall be considered as comprising the following states and no others: Illinois, Indiana, Kansas, Iowa, Michigan, Minnesota, Missouri, North Dakota, South Dakota, Oklahoma and Wisconsin.

It is also understood and agreed that the Buyer shall have the right to use the anti-knock material herein contemplated for blending it with gasoline not only at the Buyer's refineries, but also with gasoline obtained from refineries other than those of the Buyer; and that the Buyer shall be at liberty, upon giving reasonable notice to the Seller, to have the supplies of the anti-knock mixture shipped to such Buyer's and other refineries for mixture there with the gasoline supplied therefrom.

2.

The quantity of anti-knock mixture which will be furnished to the Buyer by the Seller, however, shall be controlled by the following: 4561

a. The Buyer shall upon demand of the Seller designate a portion of the aforesaid territory containing not more than five hundred (500) nor less than one hundred (100) stations or locations where the Buyer's gasoline is sold or dispensed, and where the Buyer desires that such equipment be installed. A map or plat showing

these locations together with the relative sales value of each thereof shall be furnished the Seller. The Seller then as soon as possible and without reasonably avoidable delay, shall equip a gasoline metering pump installed at each of said locations, with a mixing meter and attachments therefor, in the order that the Buyer believes the same to be most desirable. When such "portion" of the aforesaid territory has been thus equipped for the vending of said mixture to the public, another "portion" of said territory shall be similarly selected and mapped by the Buyer and equipped by the Seller, and this procedure shall continue until the entire aforesaid territory is in the judgment of the Buyer adequately equipped for the purpose of vending said mixture to the public. It is understood and agreed, however, that the Seller shall, as demanded by the Buyer, at all times supply the latter's reasonable needs for said meters for new stations, or otherwise as demanded by the Buyer.

b. A sample of the mixing meters and attachments therefor shall be submitted by the Seller to the Buyer for the Buyer's approval before installation of the same but such approval shall not be unreasonably delayed. The Seller shall keep all mixing meters and attachments therefor in good operative order and repair at its own expense during the continuance of this agreement, and shall, upon being notified by the Buyer that any thereof need attention, repair the same promptly. The Buyer shall afford to the Seller every reasonable facility and opportunity to enable it to properly inspect any of said meters and attachments therefor whenever it may so desire.

c. All of said mixing meters and attachments therefor shall be the exclusive property of the Seller and be surrendered

to the Seller by the Buyer upon the abandonment of any of the pumps to which they may be attached, or if the Buyer abandons vending the said mixture, in the same condition as when they were installed, reasonable wear and tear excepted. The Buyer shall exercise reasonable diligence for the care and protection of all said mixing meters and attachments and shall be liable or responsible therefor only for want of the exercise of such reasonable care and caution, and shall not be liable if, although having exercised all such care and caution, the same are lost, stolen or injured.

d. The Seller further agrees, without expense to the Buyer and promptly upon the Buyer's request, to equip any or all of the latter's bulk stations with apparatus suitable for mixing said anti-knock mixture with gasoline in bulk, to enable the said mixture to be dispensed from bulk supplies. All such apparatus shall be kept in good order and repair by the Buyer and surrendered to the Seller in good order less ordinary wear and tear, upon the Buyer wholly ceasing so to vend said mixture. The Seller agrees to furnish and deliver without cost to the Buyer, at such place or places as may be designated by the latter, all such extra parts as may be reasonably required to keep the said apparatus in good order and repair.

e. The Buyer agrees to order from the Seller such quantity of anti-knock mixture as may be reasonably necessary to supply the demands of the public in all such portions of the aforesaid territory as have been equipped with mixing meters and the Seller will fill all such orders barring unavoidable delay.

f. Upon compliance by the Seller with the provisions of the foregoing paragraph, the Buyer agrees to keep on hand at all times at each place where any pumps equipped with said meters and attachments are installed such quantity of said anti-knock mixture as may be reasonably necessary in the opinion of the Buyer to supply the demand of the public.

g. The Seller will ship to the Buyer and to such points as the Buyer may designate, freight prepaid, the anti-knock mixture ordered by it in suitable containers which shall be the property of the Seller and returned to it by the Buyer at such place or places as the Seller may from time to time designate and at the Seller's cost.

h. The Buyer agrees that during the continuance of this agreement it will, in adding such anti-knock mixture to its gasoline, use such proportion of anti-knock material as may be necessary for the normal quality of the Buyer's gasoline to maintain the standard of anti-knock value set forth in the preamble of this agreement.

i. None of the mixing meters, attachments therefor, or apparatus mentioned in this paragraph shall be removed by the Seller without the consent of the Buyer so long as the same continues to be used by the Buyer for the purpose of vending said mixture.

4584

The price to be paid by the Buyer to the Seller for said anti-knock mixture shall be based upon the quantity of tetra-ethyl lead contained in the anti-knock mixture furnished to the

Buyer and shall be ten dollars ($10.00) for each liter thereof contained in said mixture. The proportion of tetra-ethyl lead in said mixture shall, however, at no time during the continuance of this agreement, be less than one and three quarters liters in each five liters of said mixture, unless some agreement as to the cost thereof be arrived at between the Buyer and Seller.

Should the Seller reduce the price of said tetra-ethyl lead or sell the same at a less price to other consumers during the continuance of this agreement, it will give a similar reduction to the Buyer.

4.

The Seller elects to call the gasoline when mixed with the said anti-knock mixture "Ethyl Gas", unless adverse trade- mark rights should thereby be infringed, and the Buyer agrees that all advertisements of the same shall embody the word "Ethyl" or "Ethylized", though not if such trade-mark right be thereby infringed, in which event the Buyer agrees that said advertisement may embody some other suitable word or words free to be used and which the Seller may elect to be employed therein.

It is understood and agreed, however, that any and all responsibility for trade-mark, label, or analogous infringement, including rights relating to unfair competition, with which the Buyer may be charged for employing in such advertisements, any word or words which Seller shall so elect to employ, shall be assumed by the Seller and the Buyer shall be held harmless therefrom; and the Seller shall, at its own expense, defend any or all litigation based on such employment and pay any judgment or judgments that may be awarded to the plaintiff in the premises, or the

amount of any settlement therein if settlement be made. In the event of any such litigation or threats thereof, the SELLER shall be promptly notified thereof by the BUYER and be entitled to representation by its own counsel in all negotiations or proceedings relative thereto and may assume charge thereof if it shall so desire; but no such settlement shall be made unless by mutual agreement of the parties hereto.

5.

The Seller shall advertise in its own name and at its own expense the said anti-knock mixture in and for the Buyer's territory, the character of such advertising and the mediums thereof to be solely in the Seller's discretion. All such advertising, however, that contains the Buyer's name or refers in any way to the Buyer's products shall be submitted to the Buyer and its approval obtained before being published. The cost of all such advertising shall be as determined by the Seller but shall not be less, in the aggregate amount during any six months period of this agreement or any extension thereof, than two per cent of the cost to the buyer of the anti-knock mixture purchased from the Seller during the corresponding period. Where any such advertising, however, partakes of a general character and is not solely confined to the aforesaid territory but may be of benefit to the Buyer a fairly proportionate amount of the cost thereof shall be allocated to and included in said two per cent.

6.

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The price charged by the Buyer to the public or consumer for all gasoline sold by it and treated with said anti-knock

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mixture shall be the prevailing price of its untreated gasoline plus an amount not greater than three cents for each gallon of such gasoline so treated.

7.

The Buyer agrees, during the continuance of this agreement, not to purchase or sell for use in internal combustion engines any anti-knock mixture or material other than that herein provided to be purchased by it from the Seller, anti-knock material meaning any substance which when added in very small amount to gasoline or other motor fuel tends to suppress detonation.

8.

During the continuance of this agreement the Seller will not sell any of the said anti-knock mixture within the aforesaid territory nor will it knowingly sell any thereof to any person to be sold therein with the exception, however, that it shall have the right to sell said mixture direct to consumers in said territory where and while the Buyer may from any reason be unable so to do, provided that the price charged by the Seller for any and all of said mixture so sold by it shall not be less than the sum charged by the Buyer therefor plus an amount equal to one cent (1¢) for each gallon of gasoline that the quantity of said mixture sold by the Seller will properly treat.

9. 4587

The Seller shall prepare and submit for the Buyer's approval two forms of information and instruction, one for the guidance of service station and garage employees and any other employees who may handle the anti-knock mixture or dispense the

6770

gasoline, and a second form of directions and information for the consumer. After approval by the Buyer these forms shall be printed in convenient form by the Seller and delivered to the Buyer in sufficient quantities for distribution and the Buyer shall distribute these forms to its employees and purchasers respectively; and should any suit or suits be brought against the Buyer for injury to person or property arising from the handling or use of any of said mixture that may have been purchased from the Seller by the Buyer, and it be conclusively shown in the prosecution of such suit or suits that although all of the provisions of said directions were fully complied with, such injury nevertheless occurred, the Seller will defray the entire expense of settling the same, or if not settled out of Court the Seller shall pay all of the costs of, any such litigation together with the full amount of any judgment that may be rendered against the Buyer. The Seller shall be promptly notified by the Buyer of any such suit and it shall be represented by its own counsel in all negotiations or proceedings relative thereto and may assume exclusive charge thereof if it so desires. In case of any other liability for injury to person or property arising from the handling or use of any of said mixture other than that covered by the aforegoing portion of this paragraph, such liability and any and all expense incident thereto shall be borne equally by the Seller and Buyer, it being understood that no settlement of any claim for liability shall be made except by mutual agreement of the parties hereto.

4568

If the Seller finds and brings to the attention of the Buyer that any employee of the Buyer is disregarding the aforesaid printed

instructions, the Buyer will take such steps as may be necessary to see that the instructions are properly obeyed by him thereafter.

10.

The Seller has not as yet obtained Letters Patent of the United States for or relating to any of the anti-knock materials or compounds named in this agreement, but has applications therefor pending in the United States Patent Office and will procure the issuance as soon as practicable of Letters Patent upon at least one of such applications to broadly protect the manufacture, use and sale of the aforesaid anti-knock material. And it is expressly understood and agreed that the obligations and provisions hereof with regard to exclusive use and price to others shall be in effect only in so far as the seller shall have lawful right to assume and make the same because of protection under such Letters Patent or applications therefor.

11.

The Seller agrees at its own expense to defend the Buyer in any action or actions that may be brought against the Buyer alleging that its use and sale of anti-knock mixture so supplied by the Seller, and whether or not containing any admixtures, infringes any Letters Patent of the United States; and the Seller agrees to pay any and all judgments for damages and profits arising out of such litigation that may be assessed against the Buyer, thereby saving the Buyer harmless therefrom. It being understood that the Seller shall be entitled to representation by its own counsel in any such litigation.

6772

12.

The Seller hereby agrees that it will, at its own expense, bring and prosecute diligently through the Court or Courts of last resort, and to final adjudication, infringers of any United States Letters Patent which may be granted to the Seller for anti-knock materials or/and mixtures, in the aforesaid territory, to the end of establishing its rights under such Letters Patent and protecting the Buyer in its rights hereunder, it being understood that the Buyer shall be entitled to representation by its own counsel in any such litigation.

13.

It is intended that the rights of the Buyer under this contract shall apply under any and/all Seller's Letters Patent and Patent applications for or relating to anti-knock materials and/or mixtures, so that if the Seller should dispose of any of its patents or applications therefor, to another or others, such rights of the Buyer shall nevertheless continue under the terms of this agreement.

14.

While tetra-ethyl lead has herein been specified as the anti-knock material more particularly considered, it is understood and agreed that this Agreement shall equally apply to and cover any or all other anti-knock materials and/or mixtures (meaning any material which, when added in very small amount to gasoline or other motor fuel, tends to suppress detonation) which the Seller may have devised or developed or may hereafter acquire, devise or develop, and be covered by U.S. Patents, or pending applications therefor 457

owned or controlled by the Seller, and with which the Buyer may desire or prefer to be supplied. The price of such material shall be based on cost plus an operating charge.

15.

This agreement will be continued for a further period of two and one half years by the Seller upon request of the Buyer, such request, however, to be in writing and delivered to the Seller not later than three months prior to the termination of this Agreement) and if so continued it shall be modified or altered in the following respects, or if the Buyer so desires, a new agreement will be entered into with it by the Seller embodying said modifications and alterations together with such provisions of this agreement as do not conflict therewith.

a. The price of said tetra-ethyl lead to the Buyer will be reduced by the Seller if it can possibly do so, and while it cannot at this time definitely agree that such reduction will be made, it confidently expects that such will be the case. Should said price be reduced the Buyer shall agree to reduce the premium charged by it to the consumer so that the Buyer's net profit from the premium shall not exceed one (1¢) cent per gallon of treated gasoline. The Seller agrees to allow the Buyer a fair discount on said price based upon the quantity of said anti-knock mixture purchased by it. All details as to price, quantities, premiums, etc. are to be adjusted between the Buyer and Seller at the time of the continuance or extension of this agreement if the same be so continued or extended.

4571

b. The sale by the Seller of said mixture shall be exclusive to the Buyer in its territory except that the Seller may reserve the right to sell to others in said territory the following amount of said mixture based upon the quantity thereof purchased from it by the Buyer.

During the first six months of said continuance of this agreement an amount of said mixture equal to five per cent (5%) of the quantity sold to the Buyer.

During the succeeding year the Seller may sell to others an amount of said mixture equal to seven and one-half per cent (7½%) of the quantity thereof purchased from it by the Buyer.

During the next succeeding year, the Seller may sell to others an amount of said mixture equal to ten per cent (10%) of the quantity thereof purchased from it by the Buyer.

16.

It is understood and agreed that whether or not this agreement shall be extended as heretofore provided for, the Buyer shall have full right to procure its supplies of said anti-knock materials and/or mixtures from the Seller and to sell and dispense the same as provided for in this agreement throughout the full terms of any and all letters patent of the United States, on or relating to said materials and/or mixtures which the Seller may acquire, and, in fact, for all time thereafter during which the Seller shall manufacture or sell the same; and it is further understood and agreed that the aforesaid mixing meters to be provided by the Seller shall remain in the Buyers use so long as the Buyer shall

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continue to employ same for the aforesaid vending and dispensing purposes of said materials and mixtures supplied by the Seller. All of said mixture that may be sold by the Seller to all persons other than the Buyer shall be practically the same in effect to the mixture sold to the Buyer hereunder, and the Seller shall surround all sales of said mixture made by it to such persons with the same restrictions as are herein imposed upon the Buyer.

17.

All of the terms and provisions of this agreement as well as any extension or continuation thereof shall inure to the benefit of and be binding upon the successors and assigns of each of the parties hereto.

In Testimony Whereof the parties hereto have, each by due authority to the subscribing officers, executed these presents the day and year first above written.

GENERAL MOTORS CHEMICAL COMPANY

BY C. F. Kettering
President

Attest R. O. Clemente
Asst Secretary

STANDARD OIL COMPANY (of Indiana)

BY Allan Jamison
Vice President

Attest Robt. E. Wilson
Secretary

6573

E

Defendant's Exhibit (GM) No. 77 6776

THIS AGREEMENT made this 9th day of January, 1924, between GENERAL MOTORS CORPORATION, a corporation of Delaware, having a principal place of business at New York City, hereinafter called "General Motors", and STANDARD OIL COMPANY OF NEW JERSEY, a corporation of New Jersey, having its principal office at No.26 Broadway, New York, New York, hereinafter called the "New Jersey Company".

WHEREAS General Motors is the sole stockholder of "General Motors Chemical Company", a Delaware company, engaged in the manufacture and sale of a certain compound or compounds designed to be mixed with gasoline or other similar fuel to reduce the effect of combustion known as "knock" and to increase the efficiency of internal combustion engines, and

WHEREAS the New Jersey Company has entered into a certain contract dated the 7th day of January, 1924, with said General Motors Chemical Company relating to the purchase, mixing and sale of such compound or compounds, upon the condition that General Motors would guarantee the performance thereof by said General Motors Chemical Company,

NOW, THEREFORE, in consideration of the premises, and of the due performance on the part of the New Jersey Company of the obligations imposed by said contract upon it, and of the sum of one dollar by it paid to General Motors, the receipt of which is hereby acknowledged, General Motors does hereby guarantee the due performance on the part of said General Motors Chemical Company of its obligations under said contract at the times and in the manner therein stipulated, and further agrees to hold the New Jersey Company harmless from any default or failure on the part of said General Motors Chemical Company to carry out said contract according

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to its terms.

IN WITNESS WHEREOF the parties hereto have each by due authority to the subscribing officers, executed these presents the day and year first above written.

GENERAL MOTORS CORPORATION

By _____
President.

Attest:

_____
Asst Secretary.

STANDARD OIL COMPANY OF NEW JERSEY

By _____
Vice President.

Attest:

_____
Secretary.

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STATE OF NEW YORK }
COUNTY OF NEW YORK } ss.:

On this 12th day of January, in the year one thousand nine hundred and twenty-four, before me personally came Alfred P. Sloan, Jr. to me personally known, who, being by me duly sworn, did depose and say that he resides in New York City, N.Y. ; that he is the President of the GENERAL MOTORS CORPORATION, the corporation described in and which executed the foregoing instrument; that he knows the corporate seal of the corporation; that the seal affixed to the said instrument is such corporate seal; that it was so affixed by order of the Board of Directors of said Corporation, and that he signed his name thereto by like order.

Lucy D. Martin

NOTARY PUBLIC, BRONX COUNTY
CERTIFICATE FILED IN NEW YORK COUNTY NO. 257
COMMISSION EXPIRES MARCH 30TH 1925

STATE OF New York }
COUNTY OF New York } ss.:

On this 15th day of January, in the year one thousand nine hundred and twenty-four, before me personally came F. D. Fischer , to me personally known, who, being by me duly sworn, did depose and say that he resides in North L. I. N. Y. ; that he is the Vice-President of the STANDARD OIL COMPANY OF NEW JERSEY, the corporation described in and which executed the foregoing instrument; that he knows the corporate seal of the corporation; that the seal affixed to the said instrument is such corporate seal; that it was so affixed by order of the Board of Directors of said Corporation, and that he signed his name thereto by like order.

Ed Manning

NOTARY PUBLIC, BRONX COUNTY
CERTIFICATE FILED IN NEW YORK COUNTY NO. 269

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Defendant's Exhibit (GM) No. 78

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GENERAL MOTORS CORPORATION
OFFICE OF THE SECRETARY

FILE NO 1672

BETWEEN General Motors Chemical Co., OF Dayton, Ohio

AND Standard Oil Co. of Louisiana, Baton Rouge, La.

SUBJECT Marketing "Anti knock mixture" (Tetra-ethyl lead).

DATE January 7, 1924.

TERM Three years.

TIME FOR PERFORMANCE January 7, 1924 to January 7, 1927

AMOUNT

METHOD OF PAYMENT

OPINIONS NOTICES AND REMARKS

RECEIVED FROM J. T. Smith

SECRETARY BY LHC

RECORDED AND NUMBERED

COMPTROLLER BY H. Haney

INDEXED February 28, 1924

SECRETARY LHC

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A G R E E M E N T

between

GENERAL MOTORS CHEMICAL COMPANY

and

STANDARD OIL COMPANY OF LOUISIANA.

THIS AGREEMENT, made this 7th day of January, 1924, between GENERAL MOTORS CHEMICAL COMPANY, a corporation organized and existing under the laws of the State of Delaware having its principal offices at the City of Dayton, State of Ohio, hereinafter termed "Seller".

- and -

STANDARD OIL COMPANY OF LOUISIANA, a corporation organized and existing under the laws of the State of Louisiana, having its principal offices at the City of Baton Rouge, Louisiana, hereinafter termed "Buyer".

WHEREAS, the Seller has been and is now engaged in devising and developing certain materials to be mixed with the fuel (gasoline, kerosene or other motor fuel) for internal combustion engines, the object of such admixture being to render such fuel non-knocking, and thereby make it possible to use higher compression pressures in such engines without producing the detonation commonly known as "knock", and with the further advantage of increasing the power output of said engines with attendant economy in fuel consumption; and

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WHEREAS, the Seller represents that the preferred material thus far developed for such admixture is an organic compound known as "tetra-ethyl lead"; and

WHEREAS, the Seller represents that when tetra-ethyl lead is mixed in the proportion of about three cubic centimeters per U.S. standard gallon with a straight run petroleum distillate consisting mainly of paraffin hydrocarbons (for example, straight run distillate from Penn. crude), and just conforming to the "New Navy" Specifications for gasoline now in force, there is produced a motor fuel suitable for use in motors of sufficiently higher compression to warrant their general adoption, and which may be described as a non-knocking fuel equal in this property to a mixture of sixty per cent (60%) of the original fuel plus forty per cent (40%) Benzene (commercial 90% Benzol): and

WHEREAS, the Seller represents that it has discovered the necessary additions in the way of other materials or compounds necessary to prevent certain harmful secondary effects attendant upon the use of tetra-ethyl lead, the mixture of said materials or compounds with said tetra-ethyl lead constituting the mixture hereinafter referred to as "anti-knock mixture": and

WHEREAS, the Buyer represents that it is engaged in the business of selling gasoline to the public, and is now selling and intends to sell during the continuance of this agreement a gasoline which is a sufficient improvement in

non-knocking characteristics over the straight run distillate hereinbefore described so that it requires a lesser quantity of tetra-ethyl lead to produce a satisfactory non-knocking fuel for use in the aforementioned higher compression motors. The Buyer further represents that it is desirous of distributing a gasoline which will in non-knocking characteristics be equivalent to 60% of the hereinbefore described straight run distillate plus 40% benzene (benzol) and that if the said anti-knock mixture will enable the Buyer to accomplish such purpose it is willing to purchase the same from the Seller in accordance with and subject to the hereinafter expressed terms and conditions:

NOW THEREFORE, THIS AGREEMENT WITNESSETH:

That in consideration of the premises and of the covenants and agreements hereinafter set forth, the said parties hereby agree as follows:

1.

(a) The period of this contract shall be for no longer than three (3) years from date and shall sooner terminate eighteen months after there shall have been delivered, under this agreement, the first eight thousand (8,000) of the Seller's mixing meters and the attachments therefor at a like number of locations.

(b) The Seller hereby grants to the Buyer, for the period of this contract and for the territory hereinafter

defined, the exclusive right to sell and/or use the Seller's anti-knock mixture, subject ~~only~~ to conditions hereinafter mentioned:

The territory comprises the States of Louisiana, Tennessee, Arkansas, Mississippi, Alabama, Georgia, Florida and Kentucky.

(c) The Buyer may license, subject to the terms hereof, others to sell and/or use and to license the sale and/or use of the Seller's anti-knock mixture within the defined territory, and the expression "Buyer's Licensees" shall be deemed to mean all such parties as may from time to time be licensed hereunder.

(d) Buyer agrees that it will not knowingly sell the Seller's anti-knock mixture or any gasoline treated therewith for resale at any point which at the time is covered by any exclusive license contract made by the Seller with any third party, and the Seller agrees that in all future license contracts it will embody substantially this same clause for the protection of the Buyer's exclusive right.

2.

(a) The Seller shall, at its own expense, deliver to the Buyer, or its licensees, on Buyer's orders from time to time given within twelve months from date, eight thousand

(8,000) mixing meters and attachments therefor above mentioned. The Buyer shall cause these to be installed as promptly as practicable, after demonstration and instruction to be furnished at the Seller's cost. The Seller shall furthermore, reimburse the Buyer for the expense of such installation which should be assumed to be One Dollar ($1.00) for each installation until actually determined.

The Seller shall have the right to install any ethylizer thirty days after shipment if the Buyer has for any reason failed to do so.

There shall also be delivered by the Seller, and installed under the same conditions as specified in paragraph (a) such further mixing meters and attachments therefor as the Buyer shall from time to time order for use at other locations not previously equipped with anti-knock apparatus.

(b) A sample of the mixing meters and attachments therefor shall be submitted by the Seller to the Buyer for the Buyer's approval before installation of the same, but such approval shall not be unreasonably withheld. The Seller shall keep all mixing meters and attachments therefor in good operative order and repair at its own expense during the continuance of this agreement, and shall, upon being notified by the Buyer that any thereof need attention, repair or replace the same promptly. The Seller shall be afforded every reasonable facility and opportunity to enable it properly to inspect any of said meters and attachments therefor whenever it may so desire. 4582

(c) All of said mixing meters and attachments therefor shall be and remain the exclusive property of the Seller. Any of them at any time may be surrendered to the Seller or removed by the Buyer to any new location not previously equipped with anti-knock apparatus. The Buyer shall exercise reasonable diligence for the care and protection of all said mixing meters and attachments and shall be liable or responsible therefor, only for want of the exercise of such reasonable care and caution, and shall not be liable if, although having exercised all such care and caution, the same are lost, stolen or injured.

(d) The Seller further agrees, without expense to the Buyer and promptly upon the Buyer's request, to equip any or all bulk stations with apparatus suitable for mixing said anti-knock mixture with gasoline in bulk, to enable the said mixture to be dispensed from bulk supplies. All such apparatus shall be kept in good order and repair by the Buyer and surrendered to the Seller in good order, less ordinary wear and tear, upon the Buyer wholly ceasing to vend said mixture. The Seller agrees to furnish and deliver without cost to the Buyer, at such place or places as may be designated by the latter, all such extra parts as may be reasonably required to keep the said apparatus in good order and repair.

(e) The Seller agrees to sell to the Buyer at cost, plus a

handling charge, additional mixing meters for use by the Buyer at locations where the Buyer desires more than the one mixing meter furnished by the Seller. The Seller agrees to repurchase these from the Buyer at any time the Buyer wishes to discontinue their use, provided they are in good condition at a price that shall equal their cost less twenty percent (20%) for each year or proportionate part thereof they have been in service.

(f) The Buyer agrees to order from the Seller such quantity of anti-knock mixture as may be reasonably necessary to supply the demands of the public in all such portions of the aforesaid territory as have been equipped with mixing meters, and the Seller will fill all such orders barring unavoidable delay.

(g) The Seller will ship for account of the Buyer and on Buyer's orders and instructions, freight prepaid, anti-knock mixture in suitable containers, which containers shall be the property of the Seller and shall be returned to it at such place or places as the Seller may from time to time designate and at the Seller's cost.

(h) The Buyer agrees that during the continuance of this agreement it will, in adding such anti-knock mixture to gasoline, use such proportion of anti-knock material as may be necessary to maintain the standard of anti-knock value set forth in the preamble of this agreement.

(i) None of the mixing meters, attachments therefor, or apparatus mentioned in this paragraph shall be removed by the Seller without the consent of the Buyer so long as the same continue to be used for the purpose of vending said mixture.

3.

The price to be paid by the Buyer to the Seller for said anti-knock mixture shall be based upon the quantity of tetraethyl lead contained in the anti-knock mixture furnished to the Buyer and shall be ten dollars ($10.00) for each liter thereof contained in said mixture. The proportion of tetra-ethyl lead in said mixture shall, however, at no time during the continuance of this agreement, be less than one and three quarters liters in each five liters of said mixture, unless some agreement as to the cost thereof be arrived at between the Buyer and Seller.

Should the Seller reduce the price of said tetra-ethyl lead or sell the same at a less price to any other purchaser during the continuance of this agreement, it will give a similar reduction to the Buyer.

4.

The Seller elects to call the gasoline when mixed with the said anti-knock mixture "Ethyl Gas", unless adverse trade mark rights should develop, and the Buyer agrees that all its advertisements of the same and those of its licensees shall embody the word "Ethyl" or "Ethylized", though not if such averse trade mark right develop.

in which event the Buyer agrees that said advertisement may embody some other suitable word or words free to be used and which the Seller may elect to be employed therein.

It is understood and agreed, however, that any and all responsibility for trade-mark, label, or analagous infringement, including rights relating to unfair competition, with which the Buyer and/or its licensees, may be charged for employing in such advertisements any word or words which Seller shall so elect to employ, shall be assumed by the Seller, and the Buyer and/or its licensees, shall be held harmless therefrom; and the Seller shall, at its own expense, defend any or all litigation based on such employment and pay any judgment or judgments that may be awarded to the plaintiff in the premises, or the amount of any settlement therein, if settlement be made. In the event of any such litigation or threats thereof, the Seller shall be promptly notified thereof by the Buyer and be entitled to representation by its own counsel in all negotiations or proceedings relative thereto and may assume charge thereof if it shall so desire; but no such settlement shall be made unless by mutual agreement of the parties hereto.

5.

The Seller shall advertise in its own name and at its own expense the said anti-knock mixture, in and for the territory covered by this contract, the character of such advertising and the medium thereof to be solely in the Seller's discretion. All such advertising, however, that contains the Buyer's name or refers in any way to the Buyer's products

shall be submitted to the Buyer and its approval obtained before being published. The cost of all such advertising shall be as determined by the Seller, but shall not be less, in the aggregate amount during any six months period of this agreement than two per cent (2%) of the cost to the Buyer of the anti-knock mixture purchased from the Seller during the corresponding period. Where any such advertising, however, partakes of a general character and is not solely confined to the aforesaid territory, but may be of benefit to the Buyer, a fairly proportionate amount of the cost thereof shall be allocated to and included in said two percent.

6.

No sale of gasoline treated with anti-knock mixture under this contract shall be made at a price in excess of three cents (3¢) per gallon of treated gasoline above the then current price of untreated gasoline.

7.

For the purposes of this agreement, anti-knock mixture or material is defined to mean any substance which, when added in a very small amount to gasoline or other motor fuel, tends to suppress detonation.

During the period of this contract the Buyer agrees:

a. Not to use commercially or sell any anti-knock mixture or material which infringes upon Seller's patent rights.
b. Not to use other than Seller's anti-knock mixture in Seller's mixers.

8.

During the continuance of this agreement, the Seller will not sell any of the said anti-knock mixture within the

aforesaid territory, nor will it knowingly sell any thereof to any person to be sold therein with the exception, however, that it shall have the right to sell said mixture direct to consumers in said territory where and while there shall not be operating apparatus installed under this contract adequate to take care of such business.

9.

The Seller shall prepare and submit for the Buyer's approval two forms of information and instruction, one for the guidance of service station and garage employees and any others who may handle the anti-knock mixture or dispense the gasoline, and a second form of directions and information for the consumer. After approval by the Buyer, these forms shall be printed in convenient form by the Seller and delivered to the Buyer in sufficient quantities for distribution, and the Buyer shall cause them to be distributed in its territory; and should any suit or suits be brought against the Buyer, and/or its licensees, for injury to person or property arising from the handling or use of any of said mixture that may have been furnished by the Seller and it be established in the prosecution of such suit or suits that, although all of the provisions of said directions were fully complied with by the claimant, such injury nevertheless occurred, the Seller will defray the entire expense of settling

the same, or, if not settled out of court, the Seller shall pay all of the costs of any such litigation, together with the full amount of any judgment that may be rendered against the Buyer, and/or its licensees. The Seller shall be promptly notified by the Buyer of any such suit and it shall be represented by its own Counsel in all negotiations or proceedings relative thereto and may assume exclusive charge thereof if it so desires. In case of any other liability for injury to person or property arising from the handling or use of any of said mixture other than that covered by the foregoing portion of this paragraph, such liability and any and all expense incident thereto, shall be borne equally by the Seller and Buyer, it being understood that no settlement of any claim for liability shall be made except by mutual agreement of the parties hereto.

If the Seller finds and brings to the attention of the Buyer that any employee of the Buyer, and/or its licensees, is disregarding the aforesaid printed instructions, the Buyer will take such steps as may be necessary to see that the instructions are properly obeyed by him thereafter.

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The Seller has not as yet obtained Letters Patent of the United States for or relating to any of the anti-knock materials or compounds named in this agreement, but has applications therefor pending in the United States Patent Office and willprocure the issuance as soon as

practicable of Letters Patent upon at least one of such applications to broadly protect the use and sale of the aforesaid anti-knock material.

11.

The Seller agrees at its own expense, to defend the Buyer, and/or its licensees, in any action or actions that may be brought alleging that the use and/or sale of anti-knock mixture so supplied by the Seller, and whether or not containing any admixtures added by the Seller, infringes any Letters Patent of the United States; and the Seller agrees to pay any and all judgments for damages or profits arising out of such litigation that may be assessed against the Buyer, and/or its Licensees, thereby saving them harmless therefrom, it being understood that the Seller shall be entitled to representation by its own council in any such litigation.

12.

The Seller hereby agrees that it will, at its own expense, bring and prosecute diligently through the Court or Courts of last resort, or otherwise to final adjudication, proceedings against infringers of any United States Letters Patent which may be granted to the Seller for anti-knock materials and/or mixtures, in the aforesaid territory, to the end of establishing its rights under such letters latent and protecting the Buyer, and/or its licensees, in their

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rights hereunder, it being understood that the Buyer shall be entitled to representation by its own counsel in any such litigation.

Any money recovery which may be had in any such proceeding shall be first applied toward defraying the expenses of the Seller therein; any balance for defraying the expenses of the Buyer therein; and, of any further balance, one-half shall be paid to the Buyer to the extent that such recovery shall have been based on acts of infringement committed within the territory covered by this agreement.

13.

It is intended that the rights of the Buyer in respect to anti-knock mixture furnished by the Seller under this contract shall apply under any and all Seller's Letters Patent and Patent applications for or relating to anti-knock materials and/or mixtures, so that if the Seller should dispose of any of its patents or applications therefor, to another or others, such rights of the Buyer shall nevertheless continue under the terms of this agreement.

14.

While tetra-ethyl lead has herein been specified as the anti-knock material particularly considered, it is understood and agreed that this agreement shall equally apply to and cover any or all other anti-knock materials and/or mixtures (meaning any material which, when added in very small amount to gasoline or other motor fuel tends to

suppress detonation) which the Seller may have devised or developed or may hereafter acquire, devise or develop, and covered by U. S. Patents, or pending applications therefor, and with which the Buyer may desire or prefer to be supplied. The price of such material shall be the cost to the Seller of the material plus an additional charge for the quantity thereof required to treat each gallon of gasoline equal to the existing difference between the cost and the selling price, of the equivalent quantity of tetra-ethyl lead.

15.

All of said mixture that may be sold by the Seller to all persons other than the Buyer shall be practically the same in effect as the mixture sold to the Buyer hereunder and, if the Seller at any time sells or licenses said mixture to anyone on more favorable terms than those hereof, the Buyer shall be so advised by the Seller and be entitled to the Benefit thereof.

16.

Within twelve months after the termination of this agreement, the Seller will offer to Buyer a further license to purchase and to use and sell Seller's anti-knock mixture within the territory covered by this agreement, upon terms as favorable as those offered by Seller to any other distributor of gasoline, and will agree, in the event of Buyer's

acceptance of said offer, to give Buyer the benefit of any more favorable contract which Seller may make during the term of such further license.

During the time intervening between the termination of this present agreement and Buyer's acceptance of Seller's offer, or the expiration of the twelve months, whichever shall first occur, the Buyer shall be deemed to be operating under a non-exclusive license on the same basis as the present contract.

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The Buyer agrees for and during the term of this contract to acknowledge the validity of all Letters Patent issuing upon the aforesaid applications or upon applications hereafter filed by the Seller that are subject to this agreement, and agrees not to contest the validity of the said Letters Patent or to directly or indirectly aid or abet others in doing so.

18.

All of the terms and provisions of this agreement as well as any extension or continuation thereof shall insure to the benefit of and be binding upon the successors of each of the parties hereto.

IN TESTIMONY WHEREOF, the parties hereto have, each by due authority to the subscribing officers, executed these presents the day and year first above written.

GENERAL MOTORS CHEMICAL COMPANY

By C. F. Kettering
President.

Attest: J. Merrill
Secretary.

STANDARD OIL COMPANY OF LOUISIANA

By W. P. Miller
President

Attest: J. A. Beckwith
Secretary.

Defendant's Exhibit (GM) No. 79 67797

THIS AGREEMENT made this 9th day of January, 1924, between GENERAL MOTORS CORPORATION, a corporation of Delaware, having a principal place of business at New York City, hereinafter called "General Motors", and STANDARD OIL COMPANY OF LOUISIANA, a corporation of Louisiana, having its principal office in the City of Baton Rouge, Louisiana, hereinafter called the "Louisiana Company",

WHEREAS General Motors is the sole stockholder of "General Motors Chemical Company", a Delaware company, engaged in the manufacture and sale of a certain compound or compounds designed to be mixed with gasoline or other similar fuel to reduce the effect of combustion known as "knock" and to increase the efficiency of internal combustion engines, and

WHEREAS the Louisiana Company has entered into a certain contract dated the 7th day of January, 1924, with said General Motors Chemical Company relating to the purchase mixing and sale of such compound or compounds, upon the condition that General Motors would guarantee the performance thereof by said General Motors Chemical Company,

NOW, THEREFORE, in consideration of the premises, and of the due performance on the part of the Louisiana Company of the obligations imposed by said contract upon it, and of the sum of one dollar by it paid to General Motors, the receipt of which is hereby acknowledged, General Motors does hereby guarantee the due performance on the part of said General Motors Chemical Company of its obligations under said contract at the times and in the manner therein stipulated, and further agrees to hold the Louisiana Company harmless from any default or failure on the part of said

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General Motors Chemical Company to carry out said contract according to its terms.

IN WITNESS WHEREOF the parties hereto have each by due authority to the subscribing officers, executed these presents the day and year first above written.

GENERAL MOTORS CORPORATION

By A. P. Sloan
President

Attest:

T. A. Brantlinger
Asst Secretary

FORM APPROVED
JOHN T. SMITH
GENERAL COUNSEL

STANDARD OIL COMPANY OF LOUISIANA

By D. F. Keller President

Attest:

J. A. Bechtold
Secretary

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STATE OF NEW YORK)
: ss.:
COUNTY OF NEW YORK)

On this 12th day of January, in the year one thousand nine hundred and twenty-four, before me personally came Alfred P. Sloan Jr to me personally known, who, being by me duly swern, did depose and say that he resides in New York City N Y ; that he is the President of the GENERAL MOTORS CORPORATION, the corporation described in and which executed the foregoing instrument; that he knows the corporate seal of the corporation; that the seal affixed to the said instrument is such corporate seal; that it was so affixed by order of the Board of Directors of said Corporation, and that he signed his name thereto by like order.

Lucy D Martin

STATE OF New York)
: ss.:
COUNTY OF New York)

On this 1st day of ~~January~~ February, in the year one thousand nine hundred and twenty-four, before me personally came John A. Bechtold to me personally known, who, being by me duly swern, did depose and say that he resides in Baton Rouge La ; that he is the Secretary of the STANDARD OIL COMPANY OF LOUISIANA, the corporation described in and which executed the foregoing instrument; that he knows the corporate seal of the corporation; that the seal affixed to the said instrument is such corporate seal; that it was so affixed by order of the Board of Directors of said Corporation, and that he signed his name thereto by like order.

Wm. A. Rader

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Defendant's Exhibit (GM) No. 80

A G R E E M E N T

between

GENERAL MOTORS CHEMICAL COMPANY

and

GULF REFINING COMPANY

- - - - - -

THIS AGREEMENT, made this 26th day of January, 1924, between GENERAL MOTORS CHEMICAL COMPANY, a corporation organized and existing under the laws of the State of Delaware, having its principal offices at the City of Dayton, State of Ohio, hereinafter termed "Seller",

-and-

GULF REFINING COMPANY, a corporation organized and existing under the laws of the State of Texas, having its corporate domicile offices at the City of Port Arthur, State of Texas, hereinafter termed "Buyer".

WHEREAS, the Seller has been and is now engaged in devising and developing certain materials to be mixed with the fuel (gasoline, kerosene or other motor fuel) for internal combustion engines, the object of such admixture being to render such fuel non-knocking, and thereby make it possible to use higher compression pressures in such engines without producing the detonation commonly known as "knock", and with the further advantage of increasing the power output of said engines with attendant economy in fuel consumption; and

WHEREAS, the Seller represents that the preferred material thus far developed for such admixture is an organic compound known as "tetra-ethyl lead"; and

WHEREAS, the Seller represents that when tetra-ethyl lead is mixed in the proportion of about three cubic centimeters per U.S. standard gallon with a straight run petroleum distillate consisting mainly of paraffin hydrocarbons (for example, straight run distillate from Penn. crude), and just conforming to the "New Navy" Specifications for gasoline now in force, there is produced a motor fuel suitable for use in motors of sufficiently higher compression to warrant their general adoption, and which may be described as a non-knocking fuel equal in this property to a mixture of sixty per cent. (60%) of the original fuel plus forty per cent. (40%) Benzene (commercial 90% Benzol), and

WHEREAS, the Seller represents that it has discovered the necessary additions in the way of other materials or compounds necessary to prevent certain harmful secondary effects attendant upon the use of tetra-ethyl lead, the mixture of said materials or compounds with said tetra-ethyl lead constituting the mixture hereinafter referred to as "anti-knock mixture"; and

WHEREAS, the Buyer represents that it is engaged in the business of selling gasoline to the public, and is now selling and intends to sell during the continuance of this agreement a gasoline which is a sufficient improvement in non-knocking characteristics over the straight run distillate hereinbefore described so that it requires a lesser quantity of tetra-ethyl lead to produce

a satisfactory non-knocking fuel for use in the aforementioned higher compression motors. The Buyer further represents that it is desirous of distributing a gasoline which will in non-knocking characteristics be equivalent to 60% of the hereinbefore described straight run distillate plus 40% benzene (benzol) and that if the said anti-knock mixture will enable the Buyer to accomplish such purpose, it is willing to purchase the same from the Seller in accordance with and subject to the hereinafter expressed terms and conditions:

NOW THEREFORE, THIS AGREEMENT WITNESSETH:

That in consideration of the premises and of the covenants and agreements hereinafter set forth, the said parties hereby agree as follows:

1.

(a) The period of this contract shall be for no longer than three (3) years from date and shall sooner terminate eighteen months after there shall have been delivered, under this agreement, the first three thousand (3,000) of the Seller's mixing meters and the attachments therefor at a like number of locations.

(b) The Seller hereby grants to the Buyer, for the period of this contract and for the territory hereinafter defined, the exclusive right to sell and/or use the Seller's anti-knock mixture, subject only to conditions hereinafter mentioned.

The territory comprises the States of Texas, Pennsylvania and Delaware.

The Buyer may license, subject to the terms hereof, others to sell and/or use and to license the sale and/or use of

the Seller's anti-knock mixture within the defined territory, and the expression "Buyer's Licensees" shall be deemed to mean all such parties as may from time to time be licensed hereunder.

(d) Buyer agrees that it will not knowingly sell the Seller's anti-knock mixture or any gasoline treated therewith for resale at any point which at the time is covered by any exclusive license contract made by the Seller with any third party, and the Seller agrees that in all future license contracts it will embody substantially this same clause for the protection of the Buyer's exclusive right.

2.

(a) The Seller shall, at its own expense, deliver to the Buyer, or its licensees, on Buyer's orders from time to time given within twelve months from date, three thousand (3,000) mixing meters and attachments therefor above mentioned. The Buyer shall cause these to be installed as promptly as practicable, after demonstration and instruction to be furnished at the Seller's cost. The Seller shall furthermore, reimburse the Buyer for the expense of such installation, which should be assumed to be One Dollar ($1.00) for each installation until actually determined.

The Seller shall have the right to install any ethyliser thirty days after shipment if the Buyer has for any reason failed to do so.

There shall also be delivered by the Seller, and installed under the same conditions as specified in paragraph (a), such further mixing meters and attachments therefor as the Buyer shall from time to time order for use at other locations not previously equipped

with anti-knock apparatus.

(b) A sample of the mixing meters and attachments therefor shall be submitted by the Seller to the Buyer for the Buyer's approval before installation of the same, but such approval shall not be unreasonably withheld. The Seller shall keep all mixing meters and attachments therefor in good operative order and repair at its own expense during the continuance of this agreement, and shall, upon being notified by the Buyer that any thereof need attention, repair or replace the same promptly. The Seller shall be afforded every reasonable facility and opportunity to enable it properly to inspect any of said meters and attachments therefor, whenever it may so desire.

(c) All of said mixing meters and attachments therefor shall be and remain the exclusive property of the Seller. Any of them at any time may be surrendered to the Seller or removed by the Buyer to any new location not previously equipped with anti-knock apparatus. The Buyer shall exercise reasonable diligence for the care and protection of all said mixing meters and attachments and shall be liable or responsible therefor, only for want of the exercise of such reasonable care and caution, and shall not be liable if, although having exercised all such care and caution, the same are lost, stolen or injured.

(d) The Seller further agrees, without expense to the Buyer and promptly upon the Buyer's request, to equip any or all bulk stations with apparatus suitable for mixing said anti-knock mixture with gasoline in bulk, to enable the said mixture to be dispensed

from bulk supplies. All such apparatus shall be kept in good order and repair by the Buyer and surrendered to the Seller in good order, less ordinary wear and tear, upon the Buyer wholly ceasing to vend said mixture. The Seller agrees to furnish and deliver without cost to the Buyer, at such place or places as may be designated by the latter, all such extra parts as may be reasonably required to keep the said apparatus in good order and repair.

(e) The Seller agrees to sell to the Buyer at cost, plus a handling charge, additional mixing meters for use by the Buyer at locations where the Buyer desires more than the one mixing meter furnished by the Seller. The Seller agrees to repurchase these from the Buyer at any time the Buyer wishes to discontinue their use, provided they are in good condition, at a price that shall equal their cost less twenty per cent. (20%) for each year or proportionate part thereof they have been in service.

(f) The Buyer agrees to order from the Seller such quantity of anti-knock mixture as may be reasonably necessary to supply the demands of the public in all such portions of the aforesaid territory as have been equipped with mixing meters, and the Seller will fill all such orders barring unavoidable delay.

(g) The Seller will ship for account of the Buyer and on Buyer's orders and instructions, freight prepaid, anti-knock mixture in suitable containers, which containers shall be the property of the Seller and shall be returned to it at such place or places as the Seller may from time to time designate and at the Seller's cost.

(h) The Buyer agrees that during the continuance of this agreement it will, in adding such anti-knock mixture to gasoline, use such proportion of anti-knock material as may be necessary to maintain the standard of anti-knock value set forth in the preamble of this agreement.

(i) None of the mixing meters, attachments therefor, or apparatus mentioned in this paragraph shall be removed by the Seller without the consent of the Buyer so long as the same continue to be used for the purpose of vending said mixture.

3.

The price to be paid by the Buyer to the Seller for said anti-knock mixture shall be based upon the quantity of tetra-ethyl lead contained in the anti-knock mixture furnished to the Buyer and shall be Ten Dollars ($10.00) for each liter thereof contained in said mixture. The proportion of tetra-ethyl lead in said mixture shall, however, at no time during the continuance of this agreement, be less than one and three-quarters liters in each five liters of said mixture, unless some agreement as to the cost thereof be arrived at between the Buyer and Seller.

Should the Seller reduce the price of said tetra-ethyl lead or sell the same at a less price to any other purchaser during the continuance of this agreement, it will give a similar reduction to the Buyer.

4.

The Seller elects to call the gasoline when mixed with the said anti-knock mixture "Ethyl Gas", unless adverse trade-mark rights should develop, and the Buyer agrees that all its advertise-

ments of the same and those of its licensees shall embody the word "Ethyl" or "Ethylized", though not if such adverse trade-mark right develop, in which event the Buyer agrees that said advertisement may embody some other suitable word or words free to be used and which the Seller may elect to be employed therein.

It is understood and agreed, however, that any and all responsibility for trade-mark, label, or analogous infringement, including rights relating to unfair competition, with which the Buyer, and/or its licensees, may be charged for employing in such advertisements any word or words which Seller shall so elect to employ, shall be assumed by the Seller, and the Buyer, and/or its licensees, shall be held harmless therefrom; and the Seller shall, at its own expense, defend any or all litigation based on such employment and pay any judgment or judgments that may be awarded to the plaintiff in the premises, or the amount of any settlement therein, if settlement be made. In the event of any such litigation or threats thereof, the Seller shall be promptly notified thereof by the Buyer and be entitled to representation by its own counsel in all negotiations or proceedings relative thereto and may assume charge thereof if it shall so desire; but no such settlement shall be made unless by mutual agreement of the parties hereto.

5.

The Seller shall advertise in its own name and at its own expense the said anti-knock mixture, in and for the territory covered by this contract, the character of such advertising and the medium thereof to be solely in the Seller's discretion. All such advertising, however, that contains the Buyer's name or re-

fers in any way to the Buyer's products shall be submitted to the Buyer and its approval obtained before being published. The cost of all such advertising shall be as determined by the Seller but shall not be less, in the aggregate amount during any six months period of this agreement than two per cent. (2%) of the cost to the Buyer of the anti-knock mixture purchased from the Seller during the corresponding period. Where any such advertising, however, partakes of a general character and is not solely confined to the aforesaid territory, but may be of benefit to the Buyer a fairly proportionate amount of the cost thereof shall be allocated to and included in said two per cent.

6.

No sale of gasoline treated with anti-knock mixture under this contract shall be made at a price in excess of three cents (3¢) per gallon of treated gasoline above the then current price of untreated gasoline.

7.

For the purposes of this agreement, anti-knock mixture or material is defined to mean any substance which, when added in a very small amount to gasoline or other motor fuel, tends to suppress detonation.

During the period of this contract, the Buyer agrees:

a. Not to use commercially or sell any anti-knock mixture or material which infringes upon Seller's patent rights;

b. Not to use other than Seller's anti-knock mixture in Seller's mixers.

8.

During the continuance of this agreement, the Seller will not sell any of the said anti-knock mixture within the aforesaid territory, nor will it knowingly sell any thereof to any person to be sold therein with the exception, however, that it shall have the right to sell said mixture direct to consumers in said territory where and while there shall not be operating apparatus installed under this contract adequate to take care of such business.

9.

The Seller shall prepare and submit for the Buyer's approval two forms of information and instruction, one for the guidance of service station and garage employees and any others who may handle the anti-knock mixture or dispense the gasoline, and a second form of directions and information for the consumer. After approval by the Buyer, these forms shall be printed in convenient form by the Seller and delivered to the Buyer in sufficient quantities for distribution, and the Buyer shall cause them to be distributed in its territory; and should any suit or suits be brought against the Buyer, and/or its licensees, for injury to person or property arising from the handling or use of any of said mixture that may have been furnished by the Seller and it be established in the prosecution of such suit or suits that, although all of the provisions of said directions were fully complied with by the claimant, such injury nevertheless occurred, the Seller will defray the entire expense of settling the same, or, if not settled out of Court, the Seller shall pay all of the costs of any

such litigation, together with the full amount of any judgment that may be rendered against the Buyer, and/or its licensees. The Seller shall be promptly notified by the Buyer of any such suit and it shall be represented by its own counsel in all negotiations or proceedings relative thereto and may assume exclusive charge thereof if it so desires. In case of any other liability for injury to person or property arising from the handling or use of any of said mixture other than that covered by the foregoing portion of this paragraph, such liability and any and all expense incident thereto shall be borne equally by the Seller and Buyer, it being understood that no settlement of any claim for liability shall be made except by mutual agreement of the parties hereto.

If the Seller finds and brings to the attention of the Buyer that any employee of the Buyer, and/or its licensees, is disregarding the aforesaid printed instructions, the Buyer will take such steps as may be necessary to see that the instructions are properly obeyed by him thereafter.

10.

The Seller has not as yet obtained Letters Patent of the United States for or relating to any of the anti-knock materials or compounds named in this agreement, but has applications therefor pending in the United States Patent Office and will procure the issuance as soon as practicable of Letters Patent upon at least one of such applications to broadly protect the use and sale of the aforesaid anti-knock materials, and it is expressly stated that the present contract is made by the parties in contemplation of and relying upon said Letters Patent being issued Seller.

J.R.N.
T.J.

11.

The Seller agrees at its own expense to defend the Buyer, and/or its licensees, in any action or actions that may be brought alleging that the use and/or sale of anti-knock mixture so supplied by the Seller, and whether or not containing any admixtures added by the Seller, infringes any Letters Patent of the United States; and the Seller agrees to pay any and all judgments for damages or profits arising out of such litigation that may be assessed against the Buyer, and/or its licensees, thereby saving them harmless therefrom, it being understood that the Seller shall be entitled to representation by its own counsel in any such litigation.

12.

The Seller hereby agrees that it will, at its own expense, bring and prosecute diligently through the Court or Courts of last resort, or otherwise to final adjudication, proceedings against infringers of any United States Letters Patent which may be granted to the Seller for anti-knock materials and/or mixtures, in the aforesaid territory, to the end of establishing its rights under such Letters Patent and protecting the Buyer, and/or its licensees, in their rights hereunder, it being understood that the Buyer shall be entitled to representation by its own counsel in any such litigation.

Any money recovery which may be had in any such proceeding shall be first applied toward defraying the expenses of the Seller therein; any balance for defraying the expenses of the Buyer therein; and, of any further balance, one-half shall be paid to the Buyer to the extent that such recovery shall have been

based on acts of infringement committed within the territory covered by this agreement.

13.

It is intended that the rights of the Buyer in respect to anti-knock mixture furnished by the Seller under this contract shall apply under any and all Seller's Letters Patent and Patent applications for or relating to anti-knock materials and/or mixtures, so that if the Seller should dispose of any of its patents or applications therefor, to another or others, such rights of the Buyer shall nevertheless continue under the terms of this agreement.

14.

While tetra-ethyl lead has herein been specified as the anti-knock material particularly considered, it is understood and agreed that this agreement shall equally apply to and cover any or all other anti-knock materials and/or mixtures (meaning any material which, when added in very small amount to gasoline or other motor fuel tends to suppress detonation) which the Seller may have devised or developed or may hereafter acquire, devise or develop, and covered by U.S. Patents, or pending applications therefor, and with which the Buyer may desire or prefer to be supplied. The price of such material shall be the cost to the Seller of the material plus an additional charge for the quantity thereof required to treat each gallon of gasoline equal to the existing difference between the cost and the selling price of the equivalent quantity of tetra-ethyl lead.

15.

All of said mixture that may be sold by the Seller to all persons other than the Buyer shall be practically the same in effect as the mixture sold to the Buyer hereunder, and, if the Seller at any time sells or licenses said mixture to anyone on more favorable terms than those hereof, the Buyer shall be so advised by the Seller and be entitled to the benefit thereof.

16.

Within twelve months after the termination of this agreement, the Seller will offer to Buyer a further license to purchase and to use and sell Seller's anti-knock mixture within the territory covered by this agreement, upon terms as favorable as those offered by Seller to any other distributor of gasoline, and will agree, in the event of Buyer's acceptance of said offer, to give Buyer the benefit of any more favorable contract which Seller may make during the term of such further license.

During the time intervening between the termination of this present agreement and Buyer's acceptance of Seller's offer, or the expiration of the twelve months, whichever shall first occur, the Buyer shall be deemed to be operating under a non-exclusive license on the same basis as the present contract.

17.

The Buyer agrees for and during the term of this contract to acknowledge the validity of all Letters Patent issuing upon the aforesaid applications or upon applications hereafter filed by the Seller that are subject to this agreement, and agrees not to contest the validity of the said Letters Patent or to

directly or indirectly aid or abet others in doing so.

10.

All of the terms and provisions of this agreement as well as any extension or continuation thereof shall inure to the benefit of and be binding upon the successors of each of the parties hereto.

IN TESTIMONY WHEREOF, the parties hereto have, each by due authority to the subscribing officers, executed these presents the day and year first above written.

GENERAL MOTORS CHEMICAL COMPANY

By _____
President.

Attest:

_____
acting Secretary.

GULF REFINING COMPANY

By _____
President.

Attest:

_____
Asst. Secretary.

(SEAL)

Defendant's Exhibit (GM) No. 81 6815

Sept. 29, 1924.

Tetraethyl Lead Plant, Bayway.

Mr. A. E. Mittnacht,
Ethyl Gasoline Corp.,
25 Broadway, N. Y. C.

Dear Mr. Mittnacht:

This manufacturing plant is operated by the Standard Oil Co. (N. J.) for the account of the Ethyl Gasoline Corp. The approximate cost of construction of the plant when completed will be about $50,000.00. The plant has an estimated capacity of 100 gallons of tetraethyl lead per day. Purchase contracts for materials have been made on the basis of six months' operation, beginning Sept. 15th, 1924. In view of necessity for using the space for other purposes, this should be regarded as the limit of life of the plant.

It is proposed that the business of this plant and its relations with the Ethyl Corporation should be as follows:

1. Shipment of lead tetraethyl will be made in minimum carload lots of 1500 gallons. First carload to go forward about Oct. 4th, after which deliveries should be maintained at the approximate rate of 100 gallons per day.

2. All lead shipped to be invoiced by Standard Oil Company to Ethyl Gasoline Corporation at $2.00 per pound until such time as the construction cost of the plant and all manufacturing charges up to that date have been covered.

3. Beginning at this time, lead to be billed at approximate cost, as determined by experience, until the plant is shut down. It is now estimated that cost will be approximately $1.00 per pound.

4. When the plant is shut down, on or about March 15th, complete statement will be made up and an adjustment reached of the accounts between the Standard Oil Company and the Ethyl Gasoline Corporation.

The above proposals have been taken up separately with Mr. Maxwell, Mr. Kettering, and Mr. Midgley, all of whom approve of this method of handling the operation of

—2—

this plant.

Unless I hear from you to the contrary, I shall assume that the foregoing is also agreeable to you.

Yours very truly,

Frank A. Howard.

hv

NOTE: "Copy to F. R. Parker" is handwritten under hv on page 2.

2
E

Defendant's Exhibit (GM) No. 82

COPY

STANDARD OIL OF N. J. New York

June 23, 1924

Mr.C.F.Kettering,President,
General Motors Research Corporation,
Dayton, Ohio.

6817

My dear Ket:

I have been thinking over at considerable length certain of the points which were raised at the last conference we had with the Standard Oil Company of N.J. group in connection with the proposed partnership arrangement and I have been particularly concerned with the point that they brought up relative to the hazard that is being brought into the premises by proceeding along the proposed lines.

You recollect that at the time Midgley came on here when a difficulty developed in Dayton some week ago,I felt that we should not drastically alter our program but that we should carefully analyse the facts which had been presented, in a calm and judicial sort of a way and then decide if any change was desirable or not. I feel exactly the same way about the situation as it exists today. I have great difficulty in all these matters to form my judgment because it very frequently happens that I do not get all the facts - not that they are purposely withheld, but simply because time does not always permit the development of the full picture and important things that would contribute to the picture are not always thought of at the time the discussion is taking place.

Therefore,in connection with this particular matter; i.e. the hazard involved in this development,it would appear to me that it would be most constructive to do perhaps to some extent what we have already done but in a little different way; viz., that our new partners the Standard Oil of N.J. should appoint their medical man; the duPont Company should appoint their medical man and you should appoint whoever you wish, and that those three men should be a board of experts who would deal with the question and should submit a report to both the Standard Oil Company of N.J. and ourselves, dealing with the matter as they saw it after contributing to the picture what knowledge they themselves had and what judgment they could formulate after listening to the evidence and consulting such experts as they might care to consult in the premises.

6818

While, as I said before, such a program might be repeating what you have already done, nevertheless it would be putting it up in a formal way and should we be so unfortunate as to develop circumstances in the future which if known now would make us change our course, we would have at least been able to establish our full intention of getting all the facts that we could from the best people that we could consult in the premises. In other words, our legal and moral position would be tremendously improved.

I think also that it would be well for these experts to determine what has been done and what has not been done, if anything, and what should be done in the latter case to develop further facts concerning the reactions which are liable to develop through the use of this material in all the different ways that they can conceive of it being used or, I should say, misused. Such a procedure would develop a definite program for further experimentation and protection against the difficulties that we are sure to run into as incidents happen and they are bound to happen, of a negative character.

There is another side to the situation which is tremendously important and which I hope you and Midgeley have recognized and that is, that we must develop, without delay, a staff of experts prepared to deal with such questions that arise, in a comprehensive and authoritative manner. We should have on this staff the leading experts - those best qualified to discuss the matter and whose word will carry weight - that are in existence. Not in any way to develop propaganda in favor of the thing that is not constructive but rather to develop the truth about the thing that is constructive.

Will you kindly consider this very carefully and if you agree that I am thinking along sound lines be prepared to advise who you would like to have act for us in connection with the matter."

Very truly yours,

APSJr./K

Defendant's Exhibit (GM) No. 83

6819

Letterhead of
E. I. du PONT de NEMOURS & COMPANY
(Incorporated)
Dyestuffs Department
Sales Division

Copy to Mr. Irenee du Pont, President.

June 30th, 1924.

Mr. Alfred P. Sloan, Jr., President,
General Motors Corporation,
224 W. 57th Street,
New York, N. Y.

Dear Mr. Sloan:—

Proposed experts' committee to develop additional information relative to Tetra Ethyl Lead.
Reference: Your letter to Mr. Irenee du Pont, under date of June 25th, with enclosure.

In accordance with your request, we nominate Dr. A. K. Smith to represent the du Pont Company on this Committee, and will arrange for him to be available for consideration of this subject at any time.

In addition to the schedule of facts to be determined, as outlined in your proposed memorandum, it is my understanding that the members of this Committee will decide what other work should be done and the methods to be followed.

It seems to me that a plan outlined to me by Mr. Midgley at one time is one worthy of very serious consideration. That is, to arrange for research work to be conducted by Doctors at various institutions throughout the country. In this way we could hope to get a very accurate determina-

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tion of facts from a number of sources, as well as derive the benefit of work done by people not strictly in the employ of the companies interested. The word of men of local prominence in connection with work done on this lead poisoning subject should be of great value.

Very truly yours,

W. F. Harrington,
Ass't. Gen'l Mgr.

WFH-M

NOTE: A check mark is placed by hand after the word "President" at upper right.

Defendant's Exhibit (GM) No. 84

STANDARD OIL COMPANY

(INCORPORATED IN NEW JERSEY)

6821

MANUFACTURING DEPARTMENT

26 BROADWAY

HEAD OFFICE
CORRESPONDENCE

NEW YORK June 24th, 1924.

Lead Tetraethyl Plant

Mr. F. A. Howard,
B u i l d i n g.

Dear Sir:-

This will confirm conversation with Mr. McLaren yesterday in which we advised that the Board approved, in principle, the installation of equipment for producing 100 gallons of Lead Tetraethyl per day in the Engineering Department Testing Laboratory, referred to in your letter of June 23rd.

Very truly yours,

GMW:JFG

E-3

4619

E

Defendant's Exhibit (GM) No. 85

6422

G. M. Chemical Contracts—Standard Oil Co. of New Jersey
—Foreign Countries New File UU.

May 6, 1924.

Mr. F. A. Howard,
Standard Oil Company of N. J.,
26 Broadway,
New York, N. Y.

My dear Mr. Howard:—

Agreeable to my conversation the other day regarding negotiations between us, attached hereto is copy of a letter to Mr. Moffett which I dictated previous to your calling me on the phone, and as our telephone conversation explained our position still more fully, I am sure you thoroughly understand that we are very well satisfied with the progress that has been made, but feel in order to be sure that everything is properly provided for, that we would like to go a little more slowly than would be possible by closing up anything this week. On this you also agree so we will assume that that point is covered.

With regard to your suggestion relative to a conference of your technical people, the duPont technical people and Mr. Midgley relative to a better understanding as to the possibilities of the chlorine method, would advise that I feel a little anxious in the premises because the patent situation is so thoroughly undetermined. I have been informed that we have application for quite a number of processes which may or may not interfere with your applications. I do not know enough about the details to say whether they do or whether they do not and the last thing I would want to have

happen would be to have some conflict or interference arise which would lead you to believe that we had taken advantage of anything you had disclosed to us. Therefore, in agreeing to your suggestion which I think will be helpful, I do so on the basis of your assurance, given over the telephone, that your patent situation is absolutely established to your entire satisfaction and that you are satisfied that there is nothing that your people can disclose to our people that would in any sense cause any confusion or inject any misunderstanding or unpleasantness into a picture that is getting along so nicely.

You appreciate, of course, that we would not in any sense take advantage of or permit anybody in our organization to take advantage of anything. It is not that—but what I want to avoid is the possibility of what might be an honest conflict of

claims being interpreted as a lack of good faith on our part.

In view of the fact that you say that you are satisfied I have written Mr. Midgley asking if he will take the matter up with you and advise you when an arrangement can be made, or in the event that he sees some reason why it is not advisable at this time that he communicate with you promptly.

This will probably be the last letter I will write you until after my return from my forthcoming Western trip, at which time I assure you we will get at the matter promptly and effectively and will endeavor to have both Mr. Kettering and Mr. Midgley present so that we can make progress more rapidly and definitely. I appreciate very much my limitations in dealing with a matter which is

so involved and with which I have very little specific information as to its exact status.

Very truly yours,

APSJr./K

c.c Mr. Midgley

Defendant's Exhibit (GM) No. 86

6825

May 8, 1924.

General Motors.

Mr. Alfred P. Sloan,
General Motors Corp.,
224 W. 57th St.,
New York City.

Dear Mr. Sloan:

Confirming our conversation of today, Mr. Teagle, Mr. Moffett, and Mr. Clark returned this morning and it was agreed by all of us that your suggestion of postponing any further negotiations until after your return, with the thought that at that time all of the interested parties could sit down and stay consecutively at it until we have completed the deal, is the only feasible way out of our difficulties.

In this connection, as you know, my goings and comings have been fixed by the Court in Kansas City, and not by my own wishes. The Court has announced that it will adjourn on May 29th over to June 9th, which means that I shall be in New York from the 31st of May until the 7th of June, inclusive. Since this is fortunately exactly the time which you mentioned as being agreeable to you, our people here are therefore counting on resuming the discussions with you and your associates on or about Monday, the 2nd of June, with the hope that we may conclude the matter during the ensuing week.

In the meantime, I hope that Mr. Harrington, of the Du Pont Company, will be able to make a full investigation of our chloride method of manufacture; and I have given instructions to our Research Laboratory to see that he gets complete information on this, in the event that he is unable to begin on the matter until after my departure on Saturday.

Yours very truly,

HAMILTON M. BARKER.

hw
Copies to: Mr. Teagle
Mr. Moffett
Mr. Clark

4623 E

Defendant's Exhibit (GM) No. 87

68326

COPY

June 26, 1924.

STATUS OF LEAD TETRAETHYL MANUFACTURE

The Du Pont plant at Penns Grove, N.J., across from Wilmington, represents an investment of $800,000.00. It operates on the so-called "bromine process." It has a present capacity of 300 to 400 gals. per day, which capacity will increase steadily week by week up to the maximum of the plant, 900 gals. per day, which should be attained about Sept. 15th.

The Du Pont Company are now operating under a purchase contract calling for the purchase of 1,100,000 pounds of lead tetraethyl at $2.00 per pound, which figure was intended to cover development expense and amortization of the plant in the term of the contract. Mr. Irenee Du Pont states that it will fall somewhat short of doing this, but does not make a point of this, and I take it the discrepancy will not be a serious matter.

Bare costs of manufacture on the bromine process — material, labor, repairs, and allocated portion of general plant expenses—will amount to about 75¢ per pound when this plant is operating at its full capacity and under normal conditions, which may be expected to be in September or October. The "goal" figure for bare manufacturing costs on the above basis is estimated to be about 63¢ per pound, if and when the plant is able to attain at every stage maximum efficiencies obtainable in the laboratory. The difficulties mainly involved here are the recovery operations on the bromine.

There is a possibility that a so-called "direct" bromine process, which Dr. Kraus and the Standard Oil Co. have been working with, might be substituted with some advantage for the "Indirect" bromine process which the plant is now operating, and that a substantial saving might possibly be effected here. Our data is too incomplete on this to permit the making of figures, however. It is agreed that Dr. Kraus and Dr. Callis, for the Standard Oil Co., will visit Wilmington within a few days, to lend whatever help they can on initiating experimental work on this "direct" bromine process.

There are serious limitations on the bromine supply; and since bromine is the best corrective yet found for deposition troubles from lead tetraethyl in the engine, it is important that the available supply be conserved for this use. We have not a complete picture on bromine pro-

duction as yet, to permit us to determine where we are going to land on this for the year 1925. It is possible that unless a better corrective agent is found an investment will have to be made by, or guaranteed by, the Foundation Company for increased bromine production for this use alone. Mr. Midgeley should give his attention to this matter at once and present a report on this situation.

The chlorine process of manufacture of lead tetraethyl is figured to give a direct production cost, on the same basis as above referred to, of 45¢ per pound initially, and ultimately perhaps 37¢ to 38¢, depending upon the price of ethyl chloride. The plant investment will be from one-half to two-thirds the plant investment required by the bromine process, i. e., of the order of $450,000.00 to $750,000.00 for a 1000-gallon plant.

2

Estimates for the market for next year are 10,000,000 to 30,000,000 bbls. of treated gasoline. It is suggested, therefore, that the following manufacturing program be agreed upon:

1. Present 900-gallon per day plant to be continued at full capacity for the present.

2. 100-gallon plant, chlorine process, to be installed at the Bayway Refinery, for the account of the Foundation Company—estimated cost, $25,000. to $50,000., exclusive of building, which is now available. Equipment is to be of a type which can be salvaged substantially completely for removal to other plants. This 100-gallon per day plant to be scheduled for full operation Sept. 1st. Estimated manufacturing costs of this plant to be under $1.00 per pound. Labor item uncertain as yet.

This 100-gallon chlorine process plant has a double purpose: first, to afford the experience basis for future construction on this process; and, second, to provide an additional 100-gallons of tetraethyl per day for the end of the peak season, September and October, and for as much additional time as may be required in view of the market.

3. Two additional large-scale chlorine process plants should be laid down as soon as possible, to be ready to begin operations before the gasoline season opens in 1925. It is suggested that one of these plants, of 1000-gallons daily capacity, be located at Penns Grove, to be operated by the Du Pont Company, and that the second plant, of 500 gallons daily capacity, be located at some other point determined by a study of freight relationships, to be erected and operated by the Foundation Company.

Plans should be begun on both of these plants at once, with the expectation that the details of the process and equipment will be determined by the middle of September. On the above basis, there need be no substantial hold-up in the progress of the plant, since the buildings will require planning and initiating construction involving at least this amount of time, before the equipment orders need be placed.

The above program will give a production of 1000 gallons per day by Sept. 15th, which production can be maintained indefinitely, and an increased production of 1500 gals. per day, or a total of 2400 gals. per day, available by or before March, 1925.

If our estimates of possible business are sound, of which we shall be better able to judge by next fall, it may be that still further increases of manufacturing facilities should be then authorized, on the general principle that, so far as it is economic to do so, the basis should be 75% of manufacturing capacity to Du Pont and 25% to the Foundation Company.

With regard to the relations between the Foundation Company and the Du Pont Company, the present $2.00 per pound contract should be worked out about Oct. 1st. It is suggested that for any future contract with regard to this plant, or all contracts for the additional capacity installed by the Du Pont Company, the understanding will be that there will be a 20% per annum return on the capital employed. The Foundation Company will necessarily obligate itself to the Du Pont Company in some such manner as to guarantee Du Pont's investments in manufacturing facilities. It is suggested that of the 20% return, one-half,

or 10%, be applied toward writing off the capital investment. If for example the Foundation Company should place no orders with Du Pont after two years, then the Foundation Company would remain obligated to the Du Ponts to the extent of 80% of the original capital investment. The above guarantees to the Du Pont Company a minimum of 10% on its capital employed in manufacturing; and if the business continues successfully, this return will be 20%.

fah/ve

Copies to: Mr. J. A. Moffett, Jr.
Mr. E. W. Clark.

Defendant's Exhibit (GM) No. 88

6831

April 10, 1925.

Mr. Alfred P. Sloan, Jr.
General Motors Corp.
224 W. 57th Street,
New York City.

Dear Mr. Sloan:-

I have delayed replying to your letter of the 28th until I should learn how to answer it.

Yesterday Mr. Webb was in Wilmington and went to inspect the tetraethyl lead plant. I had an opportunity of talking with him. It was short but decidedly reassuring. Frankly, I had some misgivings as to whether a lawyer who has been engaged in selling superfluous real estate was just the "timber" I hoped for. I am not sure that he is but at least he has made a good impression on me. The job needs somebody with reasonably forward vision and plenty of courage, coupled up with enough commercial instinct to obtain the profit which the traffic will bear.

Understand that he is going to make a report of his investigation of tetraethyl lead and based on that you and Mr. Teagle will decide whether he appears to be qualified to head the organization. I am in accord with such a trial.

Sincerely yours,

Irénée du Pont

NOTE: The words "File Copy" appear diagonally across the page.

E

Defendant's Exhibit (GM) No. 89

STATE OF NEW JERSEY

6832

DEPARTMENT OF LABOR

ANDREW F. McBRIDE
COMMISSIONER OF LABOR

Trenton, N. J., Nov. 19, 1924.

C. O. Johns, Ph. D. Director,
Research Division,
Standard Oil Co.,
P.O. Box 276, Elizabeth, N. J.

My dear Dr. Johns:-

Having received a satisfactory reportin which I am informed that it is perfectly safe for your engineering force to use your experimental equipment, I am, therefore, permitting you to use this equipment in your labratory as per your request of Nov. 12th, with the understanding that you are not to use any of the apparatus used for the manufacturing of tetraethyl lead, or to again engage in its manufacture without first notifying this Department so that we can use whatever means we have to prevent a re-occurrence of the catastrophy that occurred in your Bayway plant recently.

Yours very truly,

Commissioner of Labor.

14.

Defendant's Exhibit (GM) No. 90

STATE OF NEW JERSEY 6833

DEPARTMENT OF LABOR

ANDREW F. McBRIDE
[redacted]
COMMISSIONER OF LABOR

Trenton, N. J., December 2, 1924.

Dr. C. O. Johns,
Research Development Dept.,
Standard Oil Co.,
Bayway, Linden, N. J.

My dear Dr. Johns:-

In order that your Tetraethyl Lead Department may be thoroughly dismantled and the work permanently discontinued, also that you may have sufficient time in which to dispose of the material you have on hand, I am assigning our inspector, Mr. George J. Speidel, to report at your plant tomorrow morning with the instructions to stay with you until your Tetraethyl Lead is entirely disposed of.

It will be Mr. Speidel's duty to see that it is properly handled and that there are no leaky pipes or valves. Mr. Speidel will be provided with the necessary instructions from this office.

Yours very truly,

Andrew F. McBride
Commissioner of Labor.

4631

E

Defendant's Exhibit (GM) No. 91

6834

Extract from Minutes of Meeting of the Executive Committee of General Motors Corporation duly held on the 23rd day of June, 1925.

* * * * * * * * *

Present:

Mr. Alfred P. Sloan, Jr., in the Chair,
Mr. H. H. Bassett,
Mr. Donaldson Brown,
Mr. Charles T. Fisher,
Mr. Fred J. Fisher,
Mr. Lawrence P. Fisher,
Mr. C. S. Mott,
Mr. John L. Pratt,
Mr. John J. Raskob.

* * * * * * * * *

ETHYLIZED GASOLINE

The President told the Committee of the action of the Ethyl Gasoline Corporation in withdrawing ethylized gasoline from the market as a result of the publicity campaign conducted by the New York World regarding the question of possible injury to the public health from the use of this compound.

As is already known to the Committee, arrangements have been made with the Surgeon General of the United States to conduct an investigation as to the effect of this compound on the health of the public. The President expressed himself as being very hopeful that as a result of this investigation we shall very soon be permitted to resume the sale of ethylized gasoline and that its use will rapidly increase.

4632

As an illustration of the value of this compound the Committee was informed that the Royal Air Service of Great Britain is now negotiating with the Ethyl Gasoline Corporation for $150,000. worth of ethylized gasoline and has expressed the opinion that this compound is absolutely essential to the proper operation of the Air Service.

* * * * * * * * *

A true copy.

/s/ GEORGE A. BROOKS
Secretary

Defendant's Exhibit (GM) No. 92

68336

Extract from Minutes of Meeting of the Executive Committee of General Motors Corporation duly held on the 21st day of October, 1925.

* * * * * * * * * * *

Present:

Mr. Alfred P. Sloan, Jr., in the Chair,
Mr. H. H. Bassett,
Mr. Donaldson Brown,
Mr. P. S. du Pont,
Mr. Fred J. Fisher,
Mr. C. S. Mott,
Mr. J. L. Pratt,
Mr. J. J. Raskob.

* * * * * * * * * * *

TETRAETHYLLEAD — ETHYLIZED GASOLINE

The President reported that progress is being made by the U. S. Surgeon General's Committee appointed to investigate the question of injurious effects of ethylized gasoline. This Committee has visited the duPont Company's Plant at Deepwater, New Jersey, and apparently was very favorably impressed by the precautions taken in the manufacture of this compound and so far as we know the Committee has seen nothing which would justify its taking the position that the sale of tetraethyllead involves a hazard any greater than many other manufacturing operations. The President said that he feels quite confident that the Committee's report will not be unfavorable to our continuing production of this compound; further, that since tetraethyllead has been taken off the market some of the Gasoline

4634

Companies have been marketing a so-called "Anti-Knock" Gasoline, which is really a highly refined gasoline, the amount of which is very limited and which could never be produced in sufficient quantities to satisfy the demand for a material of this kind.

The President also advised the Executive Committee that we have prepared for test purposes a Chevrolet and a Chrysler car with increased compression in order to demonstrate the saving that might be made in the consumption of gasoline if engines were specially designed to use ethlylized gasoline. This experiment has been demonstrated to Secretaries Hoover and Work who were much impressed with the potential conservation of the country's natural resources indicated by its practical application on a commercial basis. The President further stated that he intends to have these two test cars sent to our Proving Grounds where we can have thorough tests made for our own information.

* * * * * * * * * *

A true copy.

/s/ GEORGE A. BROOKS
Secretary

Defendant's Exhibit (GM) No. 93

6838

COPY

File No. 720.6—ESSO

STANDARD OIL COMPANY OF NEW JERSEY
Canton Refinery

Inter-Office
Correspondence

3822

Baltimore, Md., March 9th, 1929

In Reply Please Refer to
ESSO

Mr. Geo. W. McKnight,
New York City, N. Y.

Dear Sir:

Replying to your telegram of today, we wish to advise as a matter of record that beginning this afternoon our shipments of ESSO from Baltimore to our entire territory will contain lead.

Yours respectfully

(s) E. A. Rudigier

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4636

Defendant's Exhibit (GM) No. 94

6839

GENERAL MOTORS CORPORATION
224 West 57th Street
New York

March 29, 1926.

Mr. Ireneé duPont,
Wilmington, Delaware.

My dear Ireneé:—

I do not want to prolong an argument, but I think I have got an idea and I would like to see what you have to say about it.

In your letter of March 27th you say that it is not your idea to permit people to sell Ethyl Gas without having a sufficient amount of tetra ethyl lead in it to make it an anti-knock.

Now, it is exactly for that reason, in which I thoroughly agree with you, that I have been thinking, rightly or wrongly, that we should establish a standard gas as sure as anything possibly can be, considering all the bootleggers and gyps and everything else there is in the oil business; if you sold the material to Tom, Dick and Harry without adopting a standard, you would get just the result that you say you would not permit and it was solely for that reason that I think we have got to protect the trade name. We might just as well say that we would not permit a Buick car to leave the factory without it was up to a certain degree of standard and then take the position that we would not permit the factory to use any means of establishing that standard, such as inspection tools, etc.

Will you kindly advise me just how you would cover that point.

With regard to the question of the trade name, I do not agree with you. I think that there is a great deal in the

4637

Ethyl Gas trade name even as it stands now. I do not think the black eye that it has received is going to influence it a bit. I think that the thing is too fundamentally sound for that sort of thing. Of course, if it did receive a black eye from the standpoint that it did not have quality behind it, it would be another thing, but it did receive an immense amount of advertising all over the world and it was very constructive advertising from the standpoint of its quality ond performance. It was only destructive from the standpoint of its health hazard which has been largely neutralized by the report of the Surgeon General. Is not this true?

Very truly yours,

Alfred P. Sloan Jr.

APSJr./K

NOTE: At upper right appears "VC25,"; at upper left is stamped "Answered Mar 39, 1926 (sic) Irenee du Pont"; at lower right is written "GMC-1388a"; underlining and question mark in left margin are handwritten. Italics indicate handwriting.

Defendant's Exhibit (GM) No. 95

6811

Letterhead of
E. I. DU PONT DE NEMOURS & COMPANY
WILMINGTON, DELAWARE

Mr. Alfred Sloan, Jr.,
224 W. 57th Street,
New York City.

March 31, 1926.

Dear Alfred:—

Thanks for yours of the 29th. In my letter of the 27th in the second line where I put "Ethyl Gas" in quotation marks, it might have better been underscored also. Under my plan people who would buy ethyl fluid and put it in without supervision would be doing it under their own trade mark, such as "Esso" or any other they chose and we could rely on them to maintain quality or their product would get a "black eye." In other words, I would not want to be a party to permitting irresponsible people to put a small amount of ethyl lead in gasoline and sell it as "Ethyl Gas."

If you are right and we can control the quality of the product and sell it as ethyl gas, it of course would be good merchandising but I am fearful that the load we are undertaking is too great; that it will delay an expansion of the business and make for friction with those who are our real customers; i.e. the gasoline blender. Doubtless in time it can be worked out but it will be costly.

Sincerely yours,

Irénée du Pont

Irénée du Pont

NOTE: Across the top is written "Ethyl Gas—Contract-Sales"; at upper right appears an illegible initial; above the date is stamped "Received Apr. 1, 1925, A. P. Sloan, Jr."; to right of address appears an illegible initial; the figures "29th" and "27th" in the first line have check marks above them; to right of signature appears a routing stamp bearing initials "A.P.S.", "J.L.P.", "H.M.C.", "F.C.H.", "A.K.H.", "L.R.B.", "A.T.B.", "W.F.A."; check marks appear opposite the initials "A.P.S." and "A.T.B.".

4639

Defendant's Exhibit (GM) No. 96

IRÉNÉE DU PONT
WILMINGTON
DELAWARE

6842

June 22, 1927.

Mr. Alfred P. Sloan,
224 W. 57th Street,
New York City.

Dear Alfred:—

In case I didn't make myself clear to you in the Directors meeting of the Ethyl Gas Corporation, am writing you this in an endeavor to give you my line of reasoning:

The Ethyl Gas Corporation has at its sole disposal a material which can improve the anti-knock qualities of gasoline; it has no natural or artificial ability that large oil companies have not, which will enable it to standardize the quality of gasoline from a vaporization point of view. In our endeavors to maintain the quality of gasoline to make valuable the trade mark "Ethyl" we have undoubtedly succeeded in restricting the use of ethyl lead to a considerable extent. Surely our forecasts of a few years ago have not been met in volume of business. We must be restricting our customers for otherwise why would the Standard Oil of New Jersey refuse to adopt the trade mark "Ethyl" at all? In other words, if we have made it so onerous for gasoline companies to sell our product, and in addition have fixed it so that the man at the pump makes no additional profit by serving ethyl gas, then we have done everything we can to discourage the expansion of the use of ethyl gas.

—2—

I think it is time to "about face", insist to the Surgeon General that large and reputable gasoline companies are just as competent as we are to safe-guard the man that does

4640

Government Exhibit No. 696

the mixing, and they are just as responsible as we are for any criminal negligence. In view of the history in the past year it seems to me sure that the Surgeon General will agree with such a point of view. We should then sell Ethyl fluid to any large reputable seller of gasoline to be used as he sees fit. We could contract with him that he could not use the word "Ethyl" in connection with his trademark unless he puts sufficient of the Ethyl fluid in the gas so that the product would measure up in anti-knock qualities to our standard, whatever that may be. This should at once largely increase the sale of Ethyl fluid and enable the Ethyl Gas Corporation to begin making money in volume.

Very truly yours,

Irénée du Pont



NOTE: In upper right of both pages appear illegible initials; to right of address is stamped "Received Jun 23, 1927, A. P. Sloan, Jr."; Marginal lines are handwritten; italics indicate handwriting.

Defendant's Exhibit (GM) No. 97

6844

GENERAL MOTORS CORPORATION
BROADWAY AT 57TH STREET
NEW YORK, N. Y.

June 25, 1927.

Mr. Ireneé duPont,
Wilmington, Delaware.

My dear Ireneé:—

Thanks for your letter of June 22nd. I have been dissatisfied at the thought that you were apparently at odds with the rest of us on this most important question, but in view of the fact that everybody else seemed to feel so strongly on the other side, it seemed as if nothing could be done. I am glad to have your letter, however, and will try to answer your questions the best that I can because, notwithstanding a careful reading of your arguments and going back to the discussion we had at the meeting on Monday, I still feel just as I did before and you know that Mr. Brown, Mr. Teagle and the others feel likewise.

First. You make the following statement:—"In our endeavors to maintain the quality of gasoline to make valuable the trademark 'Ethyl' we have undoubtedly succeeded in restricting the use of ethyl lead to a considerable extent. Surely our forecasts of a few years ago have not been met in volume of business."

Answer. Now, in the first place, forecasts frequently differ from performance due to conditions which can not be forecast. During the past two years the whole oil industry has radically changed. You will remember that Mr. Teagle said that if conditions today in the oil industry paralleled those of two years ago when we were sitting around the table talking about organizing the Ethyl Gasoline Company, that we would be selling five times as much lead

4642

today. This is absolutely true. In the first place, California crude of natural anti-knock qualities is available in larger quantities than could possibly have been forecast or would have been considered even in the realm of possibility. Then again, more benzole has become available. Still again, improvements in cracking processes, due to the activities of Ethyl gasoline in developing an anti-knock material, have resulted in a bigger percentage of ordinary crude available for anti-knock qualities. All this has resulted in competition to Ethyl at a lower price or an equal price and has absolutely nothing to do with the point you are raising. Manufacturers naturally prefer—we would and you would—to supply anti-knock materials either by using tetra-ethyl lead or some other anti-knock process because they do not want to be tied up to one thing and then again, we are handicapped to some extent by our partnership with the Standard Oil Company of New Jersey. In other words, oil people do not want to support an industry having exclusive rights in which their strongest competitor has a partnership interest. Of course, we considered that at the time and it seemed, [redacted]

irrespective of the point, to be the best thing to do. I therefore come to the conclusion that the comparison between our present position and where we thought we would be, is not exclusively due to the point you make.

Second. I quote as follows:—"We have made it so onerous for gasoline companies to sell our product, and in addition have fixed it so that the man at the pump makes no additional profit by serving Ethyl gas, then we have done everything we can to discourage the expansion of the use of Ethyl gas" and then you say further—"We must be restricting our customers for otherwise why would the

Standard Oil of New Jersey refuse to adopt the trademark 'Ethyl' at all?"

Answer. Now, the Standard Oil Company of New Jersey have not refused to adopt the 'Ethyl' trade-mark except on their 'Esso' and the reason they did that was for various reasons, principally on account of their export activities and also because at the time that this was decided 'Esso' had a higher anti-knock and starting value than Ethyl gasoline and at that time we did not want to raise the standard of Ethyl gas because it would have increased the premium that we would have to pay. There were other reasons also that they had in mind. As a matter of fact, altho Mr. Teagle did not say so, nevertheless it is a fact that New Jersey at this time is proceeding in a very big way to use tetra-ethyl lead and at that time will not only use the material but will use the name also.

On this point I want to make it clear to you that we are treading in an entirely unexplored country. Until Ethyl gas came out and the possibilities of a higher compression were before us, anti-knock materials had never been heard of. It was our activities that started this. The whole picture has changed on account of this activity on our part as well as through the fact, as I pointed out before and as you well know, the oil industry has changed. Mr. Clark told me not over nine months ago, that it was our duty to develop automobiles that used as little fuel as possible as we were certainly facing a shortage. Within six months after the whole oil market is shot to pieces due to an over-production and Mr. Teagle now says—I have not discussed it with Mr. Clark—that he thinks there will be an over-production as long as he lives. Probably both are more or less wrong, but it just shows how the picture has changed and I do not think all these changed conditions and their influence on

Ethyl gasoline can be charged to the fact that we are trying to maintain a standard.

Third. As to the Surgeon General. I regret to have to differ with you and also with Mr. P.S.duPont, who I know thinks the same way, as to our relations with the Surgeon General. Personally, I know you feel that it was a mistake not to go ahead and sell tetra-ethyl lead in the face of the protest which was raised, notwithstanding that you know we had no facts to substantiate our position. Of course, the other people had no facts otherwise, but in a health situation you can't rely on a defensive

position—you must be in a position to prove your case with facts, but the other fellow doesn't have to have any facts—he can simply have a theory which you must disapprove You must realize that this is true in dealing with the matter of public health and public sentiment behind it all and Standard Oil, to some extent, is in quite a different position than a concern like the duPont Company. Every man, woman and child in the United States is either a user of our product or a potential user. The biggest asset the Corporation has at the present time is the perfectly wonderful good-will that exists toward it and its product. It is absolutely a priceless asset and in my opinion should be maintained at any hazard and at any cost. To my mind it is more valuable than cash in the bank or in our plants or even our organization. I can't see the picture any other way. Therefore, if all this is right it would simply be suicidal to take a position such as we would have taken two years ago if we had gone ahead and sold the material against the system of protest that was developing. Furthermore than that, in a practical way it would have been foolish because we would immediately have had restrictions placed on us all over the country which would have stopped us anyway

and then we would have had a terrific uphill road to overcome and get back—if we ever could get back. Frankly, I do not think we would ever have gotten back in the City of New York due to a restriction against us which we would have been unable to move simply on account of prejudice and perhaps, to a certain extent, politics. Therefore, to a certain extent I would rather work along with the Surgeon General in a cooperative way and feel that we have the support of an eminent body of experts who have given us the privilege to go ahead and sell in England and it is a question whether we would have been able to do so had we not had the support of this investigation. Personally, I am absolutely against doing anything but cooperating with the Surgeon General. I would much rather divorce ourselves entirely from Ethyl gas and close the thing up. We could easily afford to take a lossof a couple of millions but we canot afford to take a chance with the good-will of General Motors.

Fourth. I quote as follows:— "We could contract with him (the dealer) that he could not use the word 'Ethyl' in connection with his trade-mark unless he puts sufficient of the Ethyl fluid in the gas so that the product would measure up in anti-knock qualities to our standard."

Answer— You are now coming back to exactly the position that we take. We feel that if the word 'Ethyl' is used we must maintain the reputation of the word 'Ethyl'. You say that the dealer would protect his own position. Now, as a matter of fact, that is where you are wrong. In my opinion the dealer would not. You must appreciate that in buying tens of millions of dollars of products for our various cars, notwithstanding the specifications which we develop, we have to protect

ourselves and have to inspect the material coming in to be sure that the supplier lives up to the standard set. If our suppliers, reputable as they are and as anxious as they are to please us and keep our business, thought—or their organization thought—that our inspection system had been eliminated, the standard of our products would drop instantly, simply because they could not be maintained under such a method of operation. It is exactly the same thing in selling tetra-ethyl lead to dealers who are far less reputable and who understand these matters far less thoroughly than the suppliers of components that we are buying for cars. It simply could not be done and we would soon be in a position where we would have to check the standards and protect our customers. Then again, you say that we would not let them use the word 'Ethyl' unless they agreed to use it. You could not prevent them using Ethyl gas because there is value in the name and even if they did not advertise they would sell it as Ethyl and you would be up against exactly the same thing and all this, of course, would be contrary to the position of the Surgeon General where we are compelled to display the fact that it is Ethyl.

Fifth In General. I would agree with you absolutely in all you say and would endorse your scheme as a method of operating and as a practical proposition if every one in the United States was so sold on Ethyl that when they bought something with Ethyl in it and it did not work satisfactorily that they would be blaming the dealer or the raw material rather than Ethyl. If we ever reach that point—the chances are we never will—then I think you could well afford to sell the Ethyl fluid without restriction and without the maintenance of a standard, but we have got to develop that in the minds of the public first and we can

not develop it in the minds of the public by letting every Tom, Dick and Harry sell tetra-ethyl lead and set his own standard by agreeing to maintain a standard. You could not do that in any business, as I see it, and you certainly cannot do it in the oil business where there are more disreputable dealers, more bootlegging and more everything else than there is in the average industry.

As I said before, I regret very much that you do not agree with us on this point, but I know you want us to state exactly how we feel because that is the only way we can get anywhere, and I would appreciate it very much if you would carefully analyze this letter and give me your ideas why and where I am wrong.

Thanking you in advance, and with best regards, I remain,

Very truly yours,

Alfred P. Sloan, Jr.

APSJr./K

NOTE: At lower right of all four pages is written "A 6140"; beneath letterhead on first page is stamped "Answered Jun 30, 1927, Irenee du Pont"; italics indicate handwriting.

Defendant's Exhibit (GM) No. 98

IRÉNÉE DU PONT
WILMINGTON
DELAWARE

MR. ALFRED P. SLOAN, JR.
c/o General Motors Corp.
Broadway at 57th Street,
New York City.

Dear Alfred:—

I am not convinced by your letter.

First, the fact that other anti-knock materials are being sold in quantity indicates that there is a real demand for such materials and that Ethyl lead has not succeeded in pre-empting that field.

Second, I take it you don't deny that we have made it onerous for the gasoline companies to sell our product. Also, we don't allow the final purveyor to make any money by selling Ethyl gas in lieu of other gas. That certainly is not encouraging; it ought to be remedied.

Third, I have no quarrel with the Surgeon General; quite the contrary. I think he could be easily brought to see the fact that great corporations like the Standard Oil of N. J., Gulf Refining, etc. would be just as reliable in supervising the blending of Ethyl fluid with gasoline as could an employe of the Ethyl Gas Corporation working on their plant.

Fourth, the large sellers of gasoline cannot afford to jeopardize their trade mark products. This is demonstrated by your saying that the Esso gas is even higher quality than our specification. The other big gasoline companies would be just as careful.

The facts are we are still dribbling along at the rate 100,000 or 150,000 pounds a month. Two years ago we

thought we would be making ten times that amount by now. I am not kicking on the way the men have pushed it, only on a policy which is such a hindrance to progress.

Sincerely yours,

Irénée du Pont

NOTE: Beneath date line is stamped "Received Jul 5, 1927, A. P. Sloan, Jr."; underlining at bottom of first page is by hand; italics indicate handwriting.

Defendant's Exhibit (GM) No. 99

July 5, 1927.

Mr. Irenee du Pont,
Wilmington, Delaware.

68553

My dear Irenee:—

Noting yours of July 1st and continuing the discussion just in the hopes that we can get something out of it, let me say as follows:—

First. There is no question but what there is a real demand for anti-knock material. There is no question but what in the development of the high compression engine it will be a necessity and that in due course of time all fuels must have anti-knock quality or a very large percentage if they can be sold at all. Naturally, we can't pre-empt the field because there are, as you know, large quantities of fuel having anti-knock qualities that are perfectly satisfactory and in existence, therefore, they must be sold. Then again, there may be a very large quantity of benzole which, as you know, has very high anti-knock qualities, that in turn must be sold, so you see we can't possibly expect at any time to be anything but in a competitive position.

Second. I am not taking any position at all that our policies have been as constructive as they ought to be in connection with the marketing of the product. I mean by that, the sales price, the method of distribution and all factors of that character. Personally, I know nothing about the distribution of motor fuels. It is an enormous business in itself and like most all businesses, it takes a great amount of detailed knowledge and experience to be able to handle the matter intelligently. That was one of the reasons why I felt that the Standard Oil of New Jersey

partnership would be of interest, simply because they had that experience and we had none and are in a better position to solve these problems than we ever could be. As Mr. Teagle said the other day, the whole thing is brand new and we have got to proceed through evolution. I am, therefore, not in any sense defending the constructiveness of our merchandising program. On the other hand, I am defending the fact that we will never get anywhere unless we maintain a standard. That, as I see it, is the only difference between us so far as this discussion is concerned.

Third. Personally, I do not agree with you that we could go ahead and sell tetra-ethyl without supervising the blending. No one is concerned with Ethyl except Ethyl Gasoline Corporation. It may be that with the advent of the high compression engine and the necessity

of such a large percentage of fuels being of anti-knock quality, we could get to the point where tetra-ethyl lead was in such demand and was so absolutely essential to selling fuel at all, that we could 'write our own ticket', so to speak. If that time ever comes, which I very much doubt, then I probably would agree with you on everything you say and all we need to do would be to take the material away if there was any complaint in what our customer did and the penalty would be so great that they would be mighty careful to do everything we said. As I said before, that is not the situation today and probably won't ever be, and that is the reason why we all feel we have got to maintain the standard and see that precautions are properly taken to

protect the reputation of our product and to protect the continuation of its sales.

Very truly yours,

APSJr./K

NOTE: Routing stamp appears on page 1 with checks after A.P.S. and A.T.B.

Defendant's Exhibit (GM) No. 100

6856

GENERAL MOTORS CORPORATION
BROADWAY AT 57TH STREET
NEW YORK, N. Y.

July 15, 1927.

Mr. Ireneé duPont,
Wilmington, Delaware.

*Apparently not in file.

My dear Ireneé:—

Noting yours of July 1st* and continuing the discussion just inthe hopes that we can get something out of it, let me say the following:—

Do not think for a minute that I believe the merchandising program is what it ought to be. I am sure it isn't and it may be very far from what it ought to be. I think that this is being recognized at the moment and studies are being made to make such changes as our present experience may indicate are desirable. As a matter of fact, it must be recognized that General Motors is not familiar with the complicated picture of merchandising gasoline. The Standard Oil people of New Jersey ought to know about that and ought to advise us. Naturally, they are more concerned with their own problems than they are with ours, but I am sure that through evolution the matter will work out all right, and as long as we have the Standard Oil people of New Jersey as partners, we ought to give them an opportunity to show their good faith in everything and if the time is reached—I do not think it will be—when they do not want to be a real partner, the same remarks apply to General Motors, in that event I think we

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K

6857

ought to consider ways and means of changing the ownership of the Ethyl Gasoline Corporation and put it in the hands of those that are not limited to other interests, or something of that kind, and can do better by the development than the present owners can. I am sure you will agree with me that that is sound.

I think we do not always stop to think that it is only a matter of six or seven months since we really got the 'go ahead' and much has been accomplished in that time.— a great deal I think when you look back and consider it all. Undoubtedy, more could and should have been accomplished. That is always the way, nevertheless I think we have made reasonable progress. I know Mr. Teagle feels so and, as a matter of fact, I think so, and in saying this I want to say at the same time that I do not think either partner in the business has been very helpful in promoting the business itself. The Standard Oil people have had their difficulties and we have had our difficulties in advocating

—2—

the high compression engine. We have had several things to do to get our house in order and it has taken time to sell our own organization on what has seemed to me to be a very self-evident proposition. We now, however, have our house in order and with one or two exceptions our organizations are becoming alive to the advantage of a higher compression and one or two of them are enthusiastic about it. I feel sure it will not be very long now before we can become a real partner. Mr. Teagle has assured me that they are going to be the biggest distributors of Ethyl gasoline as soon as their present program can be worked out. They are entitled, of course, to be taken on their statement. but if they do not make good I feel we ought

to raise the question and I shall raise the question very vigorously as soon as a reasonable time has elapsed to enable them to carry out their program. So much for that side of it.

Now, when it comes to the matter of standard, I think we have a real difference here. None of us agree with your position. I do not wish to annoy you with a lot of correspondence and realize it will be some little time before you return and can see same, but I just today received a letter from Mr. Webb and I will enclose copy of it and will also enclose copy of letter he has written to Mr. Chew which, after you have noted, you can return to me—there is no hurry about it. This shows exactly what we would be up against if we did not maintain a standard. Probably from your point of

of

view it will demonstrate something which you will in turn advise me so that we can profit thereby.

Another phase of this standard business that is important with us right now is this:— We are raising the compression of our engines and to do so intelligently we must have a standard of fuel to go by. If we are limited by the standard that some of the present sellers of anti-knock fuels are using, it will not pay us to bother with the thing at all. Mr. Chrysler in his announcement has told his organization that they are to work to Ethyl gasoline standard. My position is that our position can not be very much different because it is the only standard. If we simply send out high compression heads or pistons and let it work out through evolution, we are going to have a great many dissatisfied users. I do not see how we can do anything different than maintain the standard of Ethyl gasoline and see that it is maintained to protect the reputation of the product. My mind would begin to approach your side of the argument

did we have exclusive contracts. In other words, take the Standard Oil Company of Indiana, for instance. With their exculsive contract over a term of years I believe they could be counted upon to protect the reputation of the product because, in a way, it is their reputation. Where there is competition, however, or where there is no exclusive privilege, I feel sure the situation would be quite different.

I would appreciate any further thoughts you might have in the premises.

Very truly yours,

Alfred P. Sloan, Jr.

APSJr./K

Enc.

NOTE: At upper right is written "VC25"; beneath date is stamped "Answered Aug 23, 1927, Irenee du Pont"; at lower right on both pages is written "GMC-1391 b"; check marks and marginal lines are by hand; italics indicate handwriting.

Defendant's Exhibit (GM) No. 101

6860

IRÉNÉE DU PONT
Wilmington
Delaware

August 23, 1927.

Mr. Alfred P. Sloan, Jr.
224 W. 57th Street,
New York City.

Dear Alfred:—

This is a belated letter to thank you for yours of the 15th and enclosures which are returned herewith.

I shall stop complaining of the situation because I feel that Chrysler's move on the high compression head is going to force the sale of anti-knock fuel to a point where we will be bound to merchandise in larger quantities, which after all is all that I am interested in and if we find the route we are now using too cumbersome, Webb will sooner or later have to switch.

Thank you for your interest.

Sincerely yours,

Irenee du Pont.

NOTE: Above the figure "15th" in the first sentence is a penciled check mark; at upper right is stamped "Received Aug 24, 1927, A. P. Sloan, Jr."; italics indicate handwriting.

E

Defendant's Exhibit (GM) No. 102

GENERAL MOTORS CORPORATION
BROADWAY AT 57TH STREET
NEW YORK, N.Y.

August 29, 1927.

Mr. Ireneé duPont,
Wilmington, Delaware.

My dear Irené:—

I have your letter of August 23rd dealing with mine of the 15th.

I felt very much worried about this situation, as I probably told you before, because I know how strong you feel about it and I hate to have anyone differ with the others so radically on such an important point. I have the matter continually in mind, knowing your viewpoint, but frankly, I can't for the life of me see how we can follow out your suggestion of entirely discarding all reference to basic standard where tetra-ethyl lead is used.

As a matter of fact, during the past two or three months there has come before us an insistent demand from many different quarters, that we not only maintain the standard but raise it, as the only way of properly exploiting the Ethyl gas idea. Mr. Chrysler is particularly emphatic that we should have a definite standard.

As you probably recollect, it was our idea at the time we started to exploit Ethyl gasoline, that we would make it a standard that was desirable from the user's viewpoint. We have been working in that direction, but progress has been slow due to many difficulties and uncertainties that have arisen. As a matter of fact, there were many factors in the picture that we did not know enough about.

I understand we all agree that if the time comes when tetra-ethyl lead is an absolute necessity and is recognized

as such by the important oil interests—assuming, of course, that that point is ever reached, which I do not think it ever will be—in such event the maintenance of a standard would be inconsequential because we would not be in a competitive situation.

Let me assure you that we will follow the matter up very closely, and in my contacts with the picture, both from the General Motors side, as a user, and from the Ethyl gasoline standpoint, I will continually keep in mind the question as to whether we are right on the question at issue.

Very truly yours,

Alfred P. Sloan, Jr.

APSJr./K

NOTE: At upper right is written "VC25"; at lower right is written "GMC-1391"; italics indicate handwriting.

Defendant's Exhibit (GM) No. 103

68633

GENERAL MOTORS CORPORATION
BROADWAY AT 57TH STREET
NEW YORK, N. Y.

January 19, 1928.

Mr. Lammot duPont,
Wilmington, Delaware.

My dear Lammot:—

I have your letter of January 14th which brings up two entirely different questions which I am taking the liberty of dealing with in the following:—

First. I appreciate the tremendous influence on the cost of lead per pound that the depreciation or amortization may have. This question of course, as you well appreciate, in turn is definitely linked up with the stability of the business. As I attempted to point out to you in my previous letter, irrespective of the answer that any individual may make to the question, nevertheless the question arises as to the hazard on account of the development which is going on in fuels which, through various methods of cracking, have anti-knock qualities within themselves. Naturally, this is a hazard which we must measure and deal with as intelligently as we can. I mention this because I do not want you to think but what there is a hazard here which must be measured. I have asked Mr. Kettering to give the best consideration he can to that phase of the matter because I realize that we must deal with additional capacity in the near future and we have got to have all the facts on the table that we can develop to enable us to measure the hazard and determine the period in which we should retire the investment in order to be on the safe side.

Second. You state in your letter that Ireneé makes the point that Ethyl Gasoline Corporation is run for the benefit of the oil industry and not with the idea of selling Ethyl gas. I think you have misunderstood Ireneé. I do not really believe he feels exactly that way. I know he disagrees entirely with the policy we are following and perhaps he thinks that that policy is advocated solely by our partners, the Standard Oil Company of New Jersey but the facts are that this is not so. Irrespective of whether Ireneé is right or wrong or irrespective of whether Mr. Brown or myself are right or wrong or

whether the Standard Oil Company are right or wrong, we feel; i.e., the Standard Oil Company, Mr. Brown and myself, that we cannot accomplish anything in the distribution of Ethyl gas and consequently cannot sell tetra-ethyl lead unless we have a definite standard on which to establish a trademark and to build a reputation. Ireneé, on the other hand, thinks there should be no standard and that we should sell tetra-ethyl lead irrespective of anything and everything, relying on the distributor to maintain his own standard. On this principle we are absolutely divided and I feel very badly about it. It has caused me much concern because I do not like to have any differences anywhere and now that you have brought up the same point I am going to try to get together with you and Ireneé and see if we cannot argue it out and at least have a better understanding of how we differ. I mention this in detail because I do not want you to think that the Standard Oil people are dictating the policy selfishly—they are not. They believe just as fully and are just as conscientious about the soundness of doing it the way I mentioned above, as we do and I know that Ireneé is just as confident of the soundness of doing it the other way. I hope that this will show you our relative positions.

To sum up the situation, I think you have given me a general idea of the possibilities of the future and that is about as far as we can go for the present.

Very truly yours,

Alfred P. Sloan, Jr.:

APSJr./K

NOTE: At upper right of first page is written "C-26" beneath which is written, in brackets, "In GM-9"; beneath the date is stamped "Received Jan 19, 1928, Lammot du Pont"; at lower right on both pages is written "GMC-588"; italics indicate handwriting.

Defendant's Exhibit (GM) No. 104

MEETING OF CAR DIVISION MANAGERS WITH EXECUTIVE COMM.,

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Meeting held at 2 P.M., at the office of the Corporation in Detroit, Michigan, on Thursday, December 1, 1921.

Present:

Mr. H. H. Bassett
Mr. K. W. Zimmerschied
Mr. B. L. Day
Mr. G. H. Mannum
Mr. A. B. C. Hardy
Mr. H. H. Rice
Mr. J. A. Haskell
Mr. A. P. Sloan, Jr.
Mr. P. S. du Pont
Mr. J. J. Raskob
Mr. H. A. Hawkins

BRANCHES HANDLING ACCESSORIES OTHER THAN THOSE MANUFACTURED BY GENERAL MOTORS CORPORATION.

Discussion ensued as to the advisability of our Branches selling accessories other than those manufactured by General Motors Divisions, such as bumpers, spot lights, etc. It was understood that the Car Division Managers will give this matter consideration and be prepared to discuss it further at the next meeting.

USED CAR SALES.

The Car Division Managers were advised that in connection with the report of the sub-committee of Sales Managers on the subject of the method of handling used cars, which was received by the Executive Committee at its meeting on November 29th, a resolution was passed requesting Vice President C. S. Mott to advise the Executive Committee what further progress has been made in the matter of the sale of used cars.

This subject was discussed at length and a suggestion made that a careful study be made to determine if a plan can be devised which can be tried out at some important center, say, Philadelphia, for purchasing, overhauling and selling used

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General Motors cars, all with the view of assisting Divisions in the sale of new cars.

Finally, it was moved and unanimously carried that Messrs. Mott, Bassett and Hawkins be appointed a Committee of three to study the Used Car Situation in an aggressive manner with the request that a report covering their investigation and suggestions be submitted to the Car Division Managers as soon as possible.

STUDY OF ENAMEL AND VARNISH DRYING.

There was presented to the meeting a letter from Dr. F. O. Clements of the Research Division, as to the advisability of the Research Corporation undertaking a study of enamel and varnish drying. After discussion, it was unanimously

RESOLVED, That this report be received, and the Advisory Staff requested to have a study of this kind made, limiting it to dope finishes, improved enamels, and methods of heating the ovens, the work to be carried on under the direction of an organisation to be determined by Mr. Mott, as Head of the Advisory Staff, in conjunction with Mr. Kettering, and progress reports to be rendered to the Car Division Managers bi-monthly.

DISCOUNTS TO EMPLOYES.

The Secretary reported, as a matter of information, that the Executive Committee has approved the recommendation of the Car Division Managers that no plan be adopted for allowing discounts to employes on the purchase of automobiles.

LIGHT DELIVERY WAGON.

Mr. Bassett asked if there is any objection on the part of the other Divisions to the Buick Division taking up the matter of production of a light delivery wagon with a capacity of, say, 1000 lbs. No objections were raised.

LETTER FROM MR. R. S. McLAUGHLIN REGARDING HIS TRIP TO EUROPE.

Vice-President A. P. Sloan, Jr., read extracts from a letter just received from Mr. R. S. McLaughlin in regard to conditions in the automotive industry in Europe, as observed by him on his recent trip. One point brought out was the development of

brakes on front wheels in France, which is regarded as an important item on automobiles in that section. It was also suggested that some of our engineers visit the European Automobile Shows in the future, and the Secretary was requested to make a note of this for consideration next year. It was understood that Mr. Sloan would send a copy of this letter to the Division Managers for their information.

WAGE RATES.

Report was received from the Industrial Relations Section, giving a tabulation of wages paid various trades. Upon motion, same was ordered filed.

SAMSON SCHOOL.

The question of using the Samson School for education of salesmen was discussed and the following motion offered and unanimously carried:

RESOLVED, That a Committee of Four, consisting of Mr. Hawkins and three of the Car Division Managers or their appointees, be appointed to study this matter and submit a written report as soon as possible. The Chairman appointed Messrs. Hawkins, Zimmerschiel, Rice and Bassett.

Upon motion, the meeting adjourned.

Secretary.

Defendant's Exhibit (GM) No. 105

COPY FOR—

6869

Mr. C. S. Mott

December 29th, 1921

Mr. C. F. Kettering,
General Motors Research Corporation,
Dayton, Ohio

Dear Ket:

Regarding the Committee that was to be appointed by Mr. Mott for the study of Enamels, Varnishes, Paints, etc.:

It has been decided after conferring with you to appoint the following Committee,—

F. O. Clements, Chairman,
E. L. Bergland
Mr. Rogers, Oakland
Mr. MacQuaid, Chevrolet
Mr. Weckler, Buick

It was understood that Mr. Clements, of course, would have charge of the work for the General Motors Research Corporation and would call on the other members of the Committee as he requires them.

The resolution as passed by the Car Division Managers at meeting held in Detroit on Dec. 1st calls for progress reports to be rendered to the Car Division Managers bi-monthly.

Very truly yours,

.....

Vice President

HHB—EG

Defendant's Exhibit (GM) No. 10[illegible] 6870

March 10, 1923

Mr. L. R. Beardslee,
General Motors Corporation,
224 West 57th St.,
New York, N. Y.

My dear Mr. Beardslee:

We have your letter, acknowledging our report on the Duco Enamels.

This report was prepared simply to stir up increased activity in the experimental work that still lies ahead. We surely believe to the uttermost in this material and believe that it will work out to our benefit from the standpoint of durability. You understand that our sole reason for paying so much attention to this material is that we are anxious to get greater durability of finishes. Thus far, we have not been able to quite equal the costs of the paint materials, this is quite a detriment in the eyes of our various car units. However, great durability is worth something.

I am glad that our report has awakened your interest.

Very truly yours,

.....

Director of Research

FOC-G

Defendant's Exhibit (GM) No. 107 6871

GENERAL MOTORS CORPORATION

New York, April 12, 1922.

Mr. C. F. Kettering,
General Motors Corporation,
Dayton, Ohio.

My dear Kettering:

Has the Laboratory done any work on the finishing of sheet metal without the use of paint? For instance, could we secure a coating of lower oxide of iron on sheet metal, this coating to be used as a permanent finish? This lower oxide is, I believe, not easily oxidized, is of good color and may be used for an acceptable finish. Might it not be possible to accomplish something in this way. Also would it be worth while experimenting on various qualities of iron and steel in an effort to find a grade that would not rust (such as Steelite)? For the moment, this method of procedure would appear almost as promising as the development of a satisfactory paint, varnish or enamel finish.

Very truly yours,

(signed)
P.S.DuPont
President

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Defendant's Exhibit (GM) No. 108

6872

MATTER OF "DUCO" PAINT

June 15, 1923.

Mr. F. O. Clements,
Director of Research,
General Motors Research Corp.,
Dayton, Ohio.

My Dear Mr. Clements:—

Be good enough to advise me if there is anything new in this situation relative to the use of this material by any of our Divisions, or haveany further developments taken place since the meeting I attended in Detroit.

Thanking you in advance,

I remain,

Very truly yours,

A.P.S.Jr./K

NOTE. In lower right hand corner is pencial notation "7/1" with check-mark and stamped box with initials A. P. S., J. L. P., P. F., W. J.. A. T. B., W. F. check-marks after A. P. S. & A. T. B.

Defendant's Exhibit (GM) No. 109

6873

GENERAL MOTORS RESEARCH CORPORATION

DAYTON, OHIO

June 20, 1923

Mr. A. P. Sloan, Jr., President,
General Motors Corporation
224 West 57th St.,
New York, N. Y.

Dear Mr. Sloan:

Replying to your letter of June 15, relative to Duco Enamel: 'Duco' is coming along very rapidly; in fact, it is proving so successful and interesting that it worries us a little bit. We are not having the proper quota of troubles.

Oakland is remodeling the entire Finishing Department, this remodeling based upon 'Duco' enamels; they are finishing with wax instead of varnish. They have put out quite a number of experimental jobs that have seemed to please the entire organization. The light colors look very good. Both Mr. Mougey and I have gone over the Oakland program very carefully and cannot see any flaws in it that might represent trouble, later on. We are surely desirous that nothing happen with this first job in 'General Motors'; for we do not want any interference with the later programs. Cadillac has been finishing a number of additional cars and they are all much pleased with the product. Finally we have succeeded in getting them to cut materially their schedule of drying and finishing which, a little later, I am sure, will include the use of 'Duco'. Our boys are at the Cadillac, at the present time, supervising this change in program, which, unquestionably, will save money for Cadillac and

give them a more durable finish than has been customary in the past.

Fisher Body has finished 100 Chevrolet jobs in black and are quite interested in the proposition. A number of cars have been finished, also, at Oshawa; however, we are not particularly pleased with the workmanship on the Canadian cars.

Olds and Chevrolet are not greatly interested in the duPont product in black, due to the fact that there is nothing that

has any more durability than japans put on and baked at high temperatures.
'Duco' is particularly advantageous in colors, especially in the lighter shades.

Buick has been so busy with their production that their work has been largely experimental, to date. They have put out a number of cars and I imagine that, a little later, their interest will be increased considerably. They have done very little work with the more recent materials, which represent a great improvement in toughness and durability.

DuPonts are going ahead and preparing for an output, by October 15, of 25,000 gallons per month, which will be ample to take care of our requirements. We have asked them to try to lower costs on the 'Duco' materials: for we believe that this is possible. In this connection, Oakland expects to make a saving of one dollar per car.

Their wax finish looks quite good. It is somewhat of a question with us as to whether they will not receive some slight sales resistance with the wax finish."

I have noticed an announcement in the current literature by the duPont organization, mentioning this new type of automobile finish.

Our committee still has quite an ambitious program ahead, which I am absolutely positive will bear fruit that will be worth while to 'General Motors'.

We are appreciative of your interest in the project.

Respectfully yours,

/s/ F. O. CLEMENTS
Director of Research

FOC-G

NOTE. Stamp at top of page 1 "Received June 22 1923 A. P. Sloan Jr." Initials, probably Mr. Sloan's, at upper right.

Defendant's Exhibit (GM) No. 110

6876

MATTER OF 'DUCO' FINISH

June 25, 1923.

Mr. F. O. Clements,
Director of Research,
General Motors Research Corp.,
Dayton, Ohio.

My dear Mr. Clements:—

I thank you very much for your letter of June 20th which is very encouraging. I am just wondering whether anything has been developed along the lines of a better vanish. As I understand it, the real question before us now is, a better varnish or outside finish.

Very truly yours,

A.P.S.Jr./K
c/c Mr. P.S. duPont

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Defendant's Exhibit (GM) No. 111

6877

GENERAL MOTORS RESEARCH CORPORATION
DAYTON, OHIO.

July 3, 1923

Mr. A. P. Sloan, Jr., President,
General Motors Corporation,
224 West 57th St.,
New York, N. Y.

Dear Mr. Sloan:

I am glad that you have made reply to my letter, concerning the status of 'Duco' as a motor-car finish; for there was one place in my previous letter where the context might be a little misleading. I mentioned that Cadillac were materially changing some of their schedules, due to this enameling and paint investigation, which would result in a better product with less time required for finishing a car. I perhaps should have made it a little clearer that this is as yet an experimental program, not yet in production. There is no question, however, but that Cadillac will profit greatly by the work which they are undertaking, at the present time. This work involves both 'Duco' and also the effect of drying paint coats at higher temperatures for shorter times.

You make inquiry about better varnishes. We do have materially better varnishes than those now used, to apply over 'Duco', that will add to the durability of the finish; but these more durable finishing varnishes require a longer time for drying and, up to date, the men at the plants have considered this extra time as prohibitive. Another objection to the use of finishing varnish over 'Duco' is the fact that no varnish will last as long as 'Duco', itself, and the time comes when the varnish begins to crack and fail and the appearance of the car is very poor.

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On account of the fact that 'Duco' is more durable than any finishing varnish now known, 'Duco' does not require a top coat of finishing varnish or of any other known finishing material to protect it; but it is desirable to do something to the 'Duco' to improve the luster of the top coat. The Oakland Company, as mentioned in my last letter, believe that they have solved this problem by rubbing and plishing the 'Duco'. This is what they call the 'wax finish'. The was finish does not have quite the luster of the finishing varnish but, as the wax gradually disappears from the surface, it

does not have a poor appearance at any stage; and, as the wax disappears, the luster of the 'Duco' increases, due to the rubbing of the finish by the owner in the process of washing, etc. As a result, the finish should stay in good condition much longer than any finish depending upon finishing varnish.

The Sales Department of the Oakland has recognized these difficulties and has accepted them as being perfectly satisfactory. They think that the wax finish is very fine and will meet no sales opposition.

We wish to continue our search for better and more durable finishes.

Very truly yours,

/s/ F. O. Clements
Director of Research

FOC-G

Note. Stamp at top of page 1 "Received Jul 5 1923 A. P. Sloan Jr."

Defendant's Exhibit (GM) No. 112

6879

MATTER OF 'DUCO' FINISH

July 20, 1923.

Mr. F. O. Clements, Director of Research,
General Motors Research Corporation,
Dayton, Ohio.

My dear Mr. Clements:—

I thank you very much for your letter of July 3rd which is indeed very interesting. By all means keep me advised as to how this thing develops. It is very important, more so I think than perhaps any of us realize.

Very truly yours,

A.P.S.Jr./K

NOTE. In lower right is notation 8/15, check-mark and stamped box with stamped initials A.P.S., J.L.P., P.F., W.J., A.T.B. and W.F.A. Check-marks A.P.S. and A.T.B.

4677

Defendant's Exhibit (GM) No. 113

6880

REPORT

OF

PAINT AND ENAMEL

COMMITTEE

OF

GENERAL MOTORS CORPORATION

August 22, 1923.

F. O. Clements - Chairman.
General Motors Research Corp.

E. L. Bergland.
General Motors Corporation

J. MacQuaid.
Chevrolet Motor Company.

R. S. Rogers.
Oakland Motor Car Company.

W. L. Weckler
Buick Motor Company.

R. D. Kavanaugh - Production and Equipment.
General Motors Corporation.

H. C. Mougey - Materials and Methods.
General Motors Research Corporation.

F. L. Chase - Asst. Materials and Methods.
General Motors Research Corporation

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CONCLUSIONS

1. Black enamels of the proper grades, including both the enamels baking for a short time at a high temperature, and those baking for a much longer time at a lower temperature, give a very durable finish.

2. The finishes obtained with the use of paint materials, as distinguished from enamels, are low in durability.

3. From the standpoint of durability, the color and rubbing varnishes now used are the weakest links in the chain of finishing materials.

4. From the same standpoint, finishing varnishes now used are the next weakest links in the chain.

5. The primer and surfacing materials are relatively durable.

6. Duco, a cellulose nitrate product, may be substituted for the color and rubbing varnishes, or more durable color and rubbing varnishes may be used with a considerable gain in durability in either case.

7. More durable finishing varnishes may be used.

8. The need for finishing varnishes may be eliminated by the use of more durable color and rubbing varnishes or by the use of Duco; in either case securing the necessary luster by rubbing and polishing.

9. With any finishing material, thorough drying is necessary in order to secure durability.

10. By the use of schedules suggested in this report, more durable finishes may be obtained. In some cases this increase in durability is accompanied by a decrease in time required for finishing and in other cases by an increase in time.

6882

Report of Paint and Enamel Committee

In the Fall of 1921, Mr. Mott appointed a committee to study the subject of paints, varnishes and enamels as applied to the finishing of automobiles. One of the first things done by this committee was to have prepared at each of the General Motors car building plants, test panels representing the standard open car finishes used by them at that time.

These panels were prepared in "lap coats", that is, the first coat covered the entire panel, the second coat covered all but a small strip at the top, the third coat covered all but a small strip of the second coat, etc., so that a portion of each coat was exposed without any coats over it. These panels were hung on test racks at St. Louis, Flint, Tarrytown and Dayton. These exposure test panels and test panels supporting the statements made in this report are submitted with this report.

The exposure tests of the panels prepared at the General Motors Plants showed that the finish used on Chevrolet bodies, that is, low bake enamel, and the finishes used on the fenders at all the plants, that is, high bake enamel, are very durable.

None of these black enameled panels have shown cracks visible to the naked eye after fifteen months exposure on our test racks, although all of them lost their luster in a comparatively short time. The luster, however, can be restored by polishing or washing with a very mild abrasive, such as Bon Ami.

In the cases of the test panels representing open bodies finished with paint materials, which includes all General Motors cars excepting the Chevrolet, the durability of the finish is very low, although no lower than the standard paint finishes of competitive cars.

On all cars using paint materials, the schedules are:

1. 1 Coat primer.
2. 1 to 7 coats surfacing materials.
3. 1 to 4 coats color varnish.
4. [illegible] to 2 coats rubbing varnish.
5. 1 coat finishing varnish.

The cheaper cars use the smaller number of coats and the more expensive the car the more coats used.

The finishing varnish of the panels on the roof test illustrating present General Motors paint finishes started to crack on the poorest panel in two months and after three months on the rack, cracks had started in the finishing varnishes on all panels. It was found that the primers and the surfacing coats on all panels were very durable.

These coats have not failed after fifteen months on the test racks. The color varnishes and rubbing varnishes were found to be very low in durability, failing where unprotected with finishing varnish in from one week to six weeks. These tests showed that in order to have durable finishes, it would be necessary to use more durable materials directly beneath the finishing varnish, for since the finishing film is very thin--on an average .0007 inch thick--it cannot offer very much protection against sun, rain or mechanical injury.

A durable material, quick and hard drying, was needed to replace the color varnishes and rubbing varnishes. Duco, a cellulose nitrate material made by the duPont Company, was the first material we found to supply this need.

Our tests have shown that panels prepared in the proper manner using Duco, have hung on our test racks without cracking for seventeen months up to date and these panels are still on exposure. There is, however, one objection to Duco. It does not have a high luster and our first attempts to secure a durable finish consisted in substituting Duco for the color and rubbing varnishes, and then putting the regular finishing varnishes over the Duco to obtain the desired luster. When it is intended to use finishing varnish over Duco, the grade of Duco designed for this purpose must be used, since there are some formulas of Duco over which finishing varnish will not dry.

While this method is a big improvement over present day practice, the gain in durability is limited by the fact that the finishing varnishes now used in production are very low in durability when compared with Duco or with the best finishing varnishes that can be produced. For example, Murphy's Over-Night Finishing varnish, which is used in production at the Buick Plant, failed over Duco in three and a half months on our test rack, while certain more durable finishing varnishes, such as Valentine's V.A.V. Finishing varnish, when used over Duco gave a finish that has been exposed seven months up to date and is still in perfect condition, and Duco, unprotected with finishing varnish, is now on our test racks in good condition after seventeen months exposure.

It was noted that when a finishing varnish was used over Duco, failure started first where the film of finishing varnish was thinnest. By applying a second coat of finishing varnish over the first coat of finishing varnish after the first coat had been thoroughly dried by force drying, a much greater durability was obtained. This gain in durability is true of the use of two coats of finishing varnish over either Duco or paint materials. Panels prepared in this manner using two coats of finishing varnish over Duco are still in perfect condition after eight and a half months exposure on our test racks.

The Buick found that since Duco did not require a finishing varnish for protection, the finishing varnish could be eliminated and the luster obtained by rubbing and polishing the Duco.

This is the so-called "wax finish" which has been adopted by the Oakland Company. This is a very durable finish and none of the panels properly prepared with this finish have failed in sixteen months up to date.

Another method of obtaining more durable coats beneath the finishing varnish is to use more durable color and rubbing varnishes of paint materials. These more durable color and rubbing varnishes are slow druing and in order to use them, it is necessary for reasons of both production and durability, to force dry them, since any paint material, unless thoroughly dried, is low in durability. Such color and rubbing varnishes are commercially obtainable and we have on our test roof, red, green, blue, black, gray, and clear color and rubbing varnishes which are much more durable than the finishing varnishes now used in production. Some of these have been on our test racks, unprotected with finishing varnish, for nine months up to date without failure, and we have all of these colors exposed for seven months up to date without failure, excepting the red, which failed in seven months when unprotected with finishing varnish. It is our understanding that Studebaker is putting into experimental production, cars finished with thoroughly baked, durable color varnishes without a top coat of finishing varnish. When durable finishing varnishes are used over these materials, very durable finishes are obtained.

Durable finishing varnishes are slow in drying, and in order to meet production requirements, force drying of the finishing varnish is desirable. This is especially desirable since force drying the finishing varnish greatly improves its durability, and if properly done, does not injure the luster of the finish. Best results have been obtained by air drying the finishing varnish over night and then slowly raising the temperature. In this way it is possible to dry the most durable finishing varnish within twenty-four hours from the time it is applied.

If a "wax finish" is found to be more desirable than the finish obtained when using finishing varnish, it is possible to obtain a very durable "wax finish" using paint materials. By using durable color and rubbing varnish in place of the present materials of low durability and thoroughly force drying these coats and then applying a durable finishing varnish instead of the present finishing varnishes of low durability and thoroughly force drying this finishing varnish, the finish so obtained may be rubbed and polished to a very satisfactory "wax finish".

Illustrations of Different Finishing Schedules.

In order to illustrate how the above ideas could be applied toward obtaining more durable finishes on General Motors cars, the following systems are suggested.

Chevrolet

We have no suggestions for improvement of the finish of the Chevrolet open cars, as the low bake black enamel used by them is cheap, easily applied, durable, and gives a good appearance. The cost of finishing by this method has recently been reduced by the substitution of fuel oil for electricity in baking the enamel. It might be desirable to do some work on Chevrolet closed cars using black enamel or some of the schedules suggested below for the other General Motors cars.

Oldsmobile

It is our understanding that the Oldsmobile Company is planning to use low bake black enamel on its new open cars. We feel that this will give them a very durable finish and the above suggestions on the Chevrolet apply here also. For colors some of the schedules suggested hereafter are applicable.

Oakland

The Oakland Company has adopted for its new open car models, the following finish:

Day	Coat	Material or Operation	Drying Time	Temperature
1	--	Clean metal with Deoxidine	--	--
1	1	Spray primer	1½ Hrs.	300°F.
1	--	Spot glaze)	• 1½ Hrs.	300°F.
1	2	Sanding Surfacer)		
1	--	Sandpaper with wet paper	--	--
1	3	Spray Duco	½ Hour	125°F.
1	4	Spray Duco	Air dry over night.	
2	--	Rub and polish and stripe	--	--

• Note that the sanding surfacer is applied over the spot glaze and both the glaze and the sanding surfacer baked in one operation.

In order to be able to polish the Duco, and in order to insure thorough drying, force drying the second coat of Duco can be substituted with advantage in this schedule for air drying.

The exact drying time for Duco varies with the kind of Duco used. It has been found that some colors of Duco, on account of differences in formula made necessary by the differences in color, require longer drying time.

We believe that Duco as applied by the Oakland will give a very durable finish.

Buick

There are several methods which might be applicable to Buick cars.

The four cylinder cars might be black enameled, as is proposed for the Olds and is now standard practice on the Chevrolet, Overland, Dodge, and the Studebaker Light Six.

For both models a "wax finish" similar in appearance to the Oakland, produced by the use of Duco over Buick primer and surfacing coats might be desirable for black or colors.

If a finishing varnish luster is desired it may be obtained by using Duco over the Buick primer and surfacing coats, properly baked, followed by one coat of durable finishing varnish for a moderate durability. In order to obtain a much greater durability the first coat of finishing varnish over the Duco may be thoroughly force dried and then rubbed and a second coat of durable finishing varnish applied. In this case the finishing varnish used directly over the Duco may not need to be much more durable than the finishing varnish now used in production at Buick, but the top coat of finishing varnish should be of maximum durability.

As an alternative, this finishing varnish after thorough force drying may be rubbed and polished to a "wax finish".

In the case of the Buick red and blue jobs, the drying time can be decreased and the durability increased by the use of durable force dried color and rubbing varnished instead of the present air dried materials of low durability. The red and blue bodies are now air dried at the rate of one coat per day and the use of force drying durable materials would permit the application of two coats per day, each coat drying about four and a half hours at 180°F . This method would require the installation of ovens for the red and blue jobs.

However, durable black color varnish requires more drying than one and one-third hours at 250oF. as now used on the Buick black rubbing varnish. Our tests indicate that durable blacks require at least double this time at this temperature. If a durable finishing varnish is used instead of the present finishing varnish of low durability, a drying time of eighteen to twenty four hours is required, even with the use of force drying. Force drying the finishing varnish would require additional oven capacity.

Cadillac

In the case of the Cadillac, the remarks on the use of Duco, durable color and rubbing varnishes and durable finishing varnishes made under the Buick heading will apply. The Cadillac Company can also greatly reduce the time required for finishing by force drying their undercoats at a higher temperature and for a shorter time than is now their practice.

4654

The Cadillac has been working along this line with apparently good results, the tests being made with a drying time for each of the primer and surfacing coats of about three hours, at from 180°F. to 200°F. instead of the standard time for the primer of twelve hours at 120°F. followed by thirty-six hours air dry, and, for the surfacing coats, twelve hours at 130°F. followed by twelve hours air dry. If Duco or baked durable paint materials be used over such undercoats, the job can be completed in from one-third to one-half the time now required, and we believe a much more durable finish will be obtained.

As an illustration of how such modified schedules would compare with the present schedule, the following schedules are tabulated.

Present Cadillac Schedule

Dry	Coats	Material	Bake Hrs.	At Temp.	Air Dry Hrs.
1	Sandblast	-	-	-	-
1	1	Primer	12	120	36
3	2	Lead Coat	12	130	12
4	3	Putty	12	130	12
5	4	Half and Half	12	130	12
6	5	1st Rough Stuff	12	130	12
7	6	2nd Rough Stuff	12	130	12
8	7	3rd Rough Stuff	12	130	12
9	8	4th Rough Stuff	12	130	12
10	-	Rub Rough Stuff	-	-	-
10	9	Transparent Sealer Coat	12	120	12
11	10	Color Sealer Coat	12	120	12
12	11	1st Color Varnish	12	130	36
14	12	2nd Color Varnish	12	130	36
16	-	Water Rub	-	-	-
16	13	3rd Coat Tinted Rubbing Varnish	12	130	*108
21	-	Water Rub	-	-	-
21	14	Finishing Varnish	12	90	84
25	-	Polish			48
27	-	Deliver to Assembly	-	-	-

*Note: The 108 hours between the 16th and 21st days includes the time for trimming the car, applying the upholstering, etc.

Suggested Schedules Nos. 1, 2, and 3.

Standard Cadillac materials are specified for undercoats, these undercoats being the same for all three schedules Nos. 1, 2, and 3. It will be noted that ten coats are specified up to the first color varnish. This large number of coats is not necessary or desirable for durability, but is specified to be in accord with present practice in obtaining Cadillac quality as it pertains to surface finish. We would recommend that the Cadillac start work to determine how many of these surfacing coats can be eliminated without sacrificing quality of surface. This will require an investigation of the relation between surface defects in the steel and the number of coats required.

4855

Undercoats for Schedules Nos. 1, 2, and 3.

Day	Coats	Material	Hours	Temperature
1	Sandblast	---	--	---
1	1	Primer	4	185
1	2	Lead Coat	3	185
2	3	Putty	3	190
2	4	Half and Half	3	200
3	5	1st Rough Stuff	3	200
3	6	2nd Rough Stuff	3	200
4	7	3rd Rough Stuff	3	200
4	8	4th Rough Stuff	3	200
5	-	Rub Rough Stuff	--	---
5	9	Transparent Sealer	3	200
5	10	Color Sealer	1-1/2	200

Schedules 1, 2, and 3 are used over these undercoats as follows:

Schedule #1 (over undercoats given above).

Day	Coats	Material	Hours	Temperature
6	11	Duco	1	150
6	12	Duco	1	150
6	—	Rub and polish Duco and Trim. Deliver to Assembly after trimming on the 7th or 8th day.		

Schedule #2 (over undercoats given above).

Day	Coats	Material	Hours	Temperature
6	11	Duco	1	150
6	12	Duco	1	150
6	—	Rub Duco	-	---
6	13	Durable Rubbing Varnish	12	150
7	—	Rub Durable Rubbing and Trim		
9	14	Finishing Varnish	Air Dry Over Night.	

Force dry the finishing varnish at 120° from the morning of the 10th day to the morning of the 11th day or 12th day, delivering to the Assembly the 11th or 12th day, or air dry the finishing varnish six days as is now standard practice, delivering to the Assembly the 15th day.

Schedule #3. (Over undercoats given above.)

Day	Coats	Material	Hours	Temperature
6	11	Durable Color Varnish	4-1/2	180
6	12	Durable Color Varnish	4-1/2	180
7	--	Rub Color Varnish	-	-
7	13	Tinted Durable Rubbing	4-1/2	180
7	--	Rub and Trim	-	-
9	14	Finishing Varnish	Air Dry Over Night.	

Force dry the finishing varnish starting at 120°F. on the morning of the 10th day, and gradually increase the temperature to give the quickest drying time without loss of luster. Deliver to Assembly on the 11th or 12th day, or air dry the finishing varnish six days as is now standard practice, delivering to Assembly the 15th day.

On schedules 1 and 2, we believe that only two coats of Duco are necessary, but since Cadillac has not been able to obtain a satisfactory finish with less than four coats of Duco, further work should be done to establish the best practice.

It will be noted that on Schedule 3, the top coat of finishing varnish is applied over a "Durable Rubbing Varnish" This "Durable Rubbing Varnish" is a varnish having the durability of an "Overnight Finishing Varnish".

It is our understanding that Packard has adopted the method of using a top coat of durable finishing varnish over a durable varnish of this type, and we believe that the Packard Company has very greatly improved the durability of its job by this method.

Closed Cars of all Makes.

We see no reason why the ideas expressed above in regard to open cars should not apply in many cases to closed cars, if the application of the upholstering and top materials is done at the proper time in relation to the finishing operations. As an illustration of how the method of finishing depends on the time of upholstering and trimming and other details, a car that is completely upholstered cannot be subjected to as high temperatures in finishing as one that is upholstered after painting.

Sources of Supply for Color, Rubbing & Finishing Varnishes.

We have satisfactory exposure tests on durable color and rubbing varnishes from the following makes:

[6890]

Acme
Ditzler
Flint
Lowe Bros.
Pratt & Lambert
Sherwin-Williams
Valentine

Since all of these Companies make materials of both high and low durability, we would suggest that in case any of the General Motors units plan to make tests on more durable finishes than those they are now using, the co-operation of the Committee be obtained in securing these finishes.

We have made a number of tests on finishing varnishes and we can recommend certain finishing varnishes of high durability, but, since our tests on finishing varnishes are not complete, we are not in a position to report on the relative durabilities of the different finishing varnishes now on the market.

Acknowledgement for Aid in this Work.

During the progress of the work covered by this report, the executives and finishing departments of Fisher Body Corporation and of all the General Motors Corporation Divisions have co-operated with us in every way possible. In addition to the preparation of test panels, a large number of cars have been finished in experimental production by all of the above units, using methods and materials as suggested in this report.

The Committee also wishes to acknowledge the aid received from the duPont Company and from their engineer, Mr. R. C. Williams, in the development of Duco.

Defendant's Exhibit (GM) No. 114.

6891

GENERAL MOTORS RESEARCH CORPORATION.

DAYTON, OHIO.

November 26, 1923

Mr. W. P. Allen.
E. I. duPont deNemours & Co.,
Wilmington, Del.

Dear Mr. Allen:—

I have just made a trip around the different automobile plants, discussing the paint and varnish situation. Mr. Clements has asked me to write to you, letting you know how the situation stands at present.

At Cadillac, they are very much interested in Duco and recognize that, by means of Duco, they can get a more durable finish than with any other known finishing material; but they are not satisfied that they can sell Cadillac cars without as high a finish as they now obtain with finishing varnish. Under these conditions, they are putting out a large number of tests, using the most durable paint and varnish materials that can be obtained. It appears that these new varnish materials with which they are experimenting will give them a durability of at least double that of their present finish. Under these conditions, their interest in Duco depends to a large extent upon the possibility of obtaining a high-lustre finish over Duco. It is possible to obtain this finish by using finishing varnish over Duco; but, since the durability of the job is no greater than that of the finishing varnish, the most durable paint materials will be equally satisfactory if finishing varnish is used as the top coat.

You, of course, are familiar with the developments at Oakland and you know to what extent "Fisher Body" is working on getting Oakland closed cars finished with Duco.

The Oldsmobile Company use black enamel, but they are planning to put out a comparatively small number of jobs in colors. They are experimenting with Duco and are also experimenting with high-bake color enamels. These high-bake color enamels are simply very durable color and rubbing varnishes. They can be handled in their regular ovens with their regular system and will give them high-lustre finish. They are planning to let their dealers decide whether they prefer the color enamel or the Duco jobs.

At the Buick I had a very long talk with Mr. Weckler and Mr. Brown, Superintendent of their Body Department. Both Mr. Weckler and Mr. Brown stated that, since Duco was so very much more durable than any other finishing material, they did not believe that it was desirable for Buick to experiment with anything between their present finish and Duco. They feel that it is possible to obtain a satisfactory lustre on Duco by the wax finish. This opinion is based largely upon the performance of a car which Mr. Brown has driven, personally, for the last year. It was finished with the old, original, bright black Viscolac enamel and, as you know, this enamel polished to a high lustre. The Buick Company is experimenting with Duco; but, when I visited them last week, they expressed their disappointment, due to their inability to obtain Duco for experimental work. On

October 5, they ordered several different colors of Duco for experimental purposes, so that they could finish cars and interest their organization in these cars. Up to Wednesday, Nov. 21, none of this material had been received, except the black Duco and Duco thinners. They were especially dis-

appointed about not receiving the rest of the material as they had planned to use part of it in finishing a closed car for Mr. Durham, Asst. Gen. Mgr. They had planned to have this car finished as a surprise for him when he returned Thanksgiving.

They had finished the cars with the black Duco and had the bodies ready for the final polish. They stated that this black Duco worked better, flowed out better, gave a smoother surface, required a smaller amount of rubbing and rubbed much more easily than the old Duco; the only question is as to their ability to obtain a satisfactory polish on this material.

Mr. Weckler and Mr. Brown both stated that, if Duco were to be adopted by Buick either entirely or for part of their production for the 1925 model, it would be necessary for them to immediately start through a small production of at least twenty cars a day, so that the method of handling the material could be worked out, operators trained, and then a new line-up made for handling the Duco in the factory. They feel that if it requires as long a time to obtain material as has been spent in trying to obtain this Duco ordered on October 5th, the source of supply is too unreliable to warrant their interest in Duco for the 1925 model; but, if Duco can be obtained upon short notice and if the situation in regard to the raw materials and manufacture of Duco is in such shape that they can be guaranteed prompt delivery of the desired amounts, both now and in 1925 production, they feel that it is very desirable to seriously consider Duco for at least a part of their 1925 production.

The other factor in their interest in Duco hinges on how high a lustre they can obtain on the Duco, since they feel that a high lustre-job is absolutely necessary.

Will you please let Mr. Clements know whether you believe that the situation in regard to Duco is such that it

is desirable for us to continue our efforts to interest Buick for the 1925 production. In fact, we would like to have definite word from you in regard to the following points, so that we may know just what promises we can make to our folks and the amount of pressure that we can put behind the work:

1. What can we tell them about the ability to obtain Duco, both as to samples and as to material for regular production? and what amount of time is necessary between placing an order and receiving the Duco?

2. Will the sources of supply and manufacturing processes be in such a state that we can promise our folks that they can obtain all the Duco that they desire for 1925 production? and how soon could they start to obtain sufficient amounts for experimental production?

3. What can we tell them about the present situation in regard to matching colors?

4. What can we tell them in regard to the possibilities of obtaining a high-lustre finish without sacrificing the present desirable qualities of toughness, ease of rubbing, good looking properties, etc?

5. Is there any possibility of obtaining a high-lustre finish without rubbing and polishing?

—3—

These are questions that are constantly being put to us by our car units and we are compelled to depend upon you for the answers. This information will help us materially in planning our work for the immediate future.

Yours very truly,

(S) H. C. Mougey

M:B
KOH

Defendant's Exhibit (GM) No. 115

6895

Copy to: A. P. Sloan, President,
General Motors Corp., N. Y. C.
Irenee duPont
J. W. Elms (Parlin)

E. I. DU PONT DE NEMOURS & COMPANY
WILMINGTON, DELAWARE

CELLULOSE PRODUCTS DEPARTMENT

January 11, 1924.

Dr. F. O. Clements,
Director of Research,
General Motors Research Corp.,
Dayton, Ohio.

Dear Dr. Clements:

Referring to your letter of November 26th, which letter would have been answered more promptly but for the fact that it has been necessary for us to clear up a number of problems before giving definite answers to your specific questions, I am pleased to advise you as follows:

(1)—We are now able to furnish both samples and material for regular production in all established colors in the amounts shown under Question 2. Both samples and orders for regular production in established colors can be shipped within ten days from receipt of order.

(2)—Our present capacity for the manufacture of Duco is 35,000 gallons per month, of which approximately 10,000 gallons is now being used. This capacity can be increased to 50,000 gallons per month on four months'

notice and to 100,000 gallons per month on six months' notice. These figures are based on the assumption that the greater part of our production will be confined to comparatively few colors, which has been our experience in the automobile industry to date. The complexity of color formulas necessary to obtain desired shades is also an important factor affecting productive capacity, and it should be to the interest of both the General Motors Corporation and ourselves to standardize wherever possible on colors which do not require the use of a large number of pigments. Our experience to date leads us to believe that many varnish or paint colors which we have been asked to match contain only one or two pigments, whereas in our case, in addition to using the same basic pigments, we are obliged to use several other colors in very small amounts to offset the difference in effect, resulting from the difference between our vehicle and that used in paint and varnish. It would, therefore, be mutually advantageous if we could be consulted before any of the General Motors units reach a definite decision as to the exact shade desired for any particular job.

As you know, our chief difficulty, in so far as quantity production is concerned, has been due to a shortage in the production of butyl alcohol which in turn was due to manufacturing difficulties and also lack of capacity on the part of the one manufacturer of this chemical. I am glad to be able to advise you that the Commercial Solvents Corporation have discovered the cause of their manufacturing difficulties and their plant at Terre Haute is now producing to capacity. In addition to this a new plant at Peoria has been completed and will in all probability be operating at

capacity by the first of February. These two factories will provide for all of the expected consumption in the immediate future and can be expanded in a short time if the demands of the business require it. In addition to this we have purchased butyl alcohol of foreign manufacture and crude fusel oil of foreign production in an amount which is equivalent to 450,000 gallons of Duco and Thinner. This material constitutes an insurance fund which will take care of any shortage in solvents from any cause for a considerable period of time.

(3)—If the color can be obtained with pigments that are readily available we can match samples within three weeks; otherwise, it may require as long as eight weeks, but we can tell at the end of one week after receiving the sample which one of these two periods will be required. In this connection it will be of considerable assistance to us if when the sample is submitted we could be advised whether an exact match is absolutely necessary or whether an approximate match would be acceptable.

(4)—To date we have been unable to obtain a high lusture finish comparable to the varnish finish without sacrificing some of the present desirable qualities of Duco. We have, however, under study at the present time modifications of our formulas which should improve to marked degree the lustre now being obtained. Some additional research, however, is necessary before these modifications can be offered to the Motors units. We have seen recently at the Oakland Plant jobs prepared for the New York Automobile Show which have a very high degree of lustre obtained without rubbing by polishing and waxing.

(5)—We know of no such possibility at this time, if the high lustre varnish finish is used as the standard. As

mentioned under Question 4, the Oakland Company is succeeding in obtaining a lustre which is much higher than has been obtained in the past without rubbing but not without polishing. We might add that there is a marked effect on the lustre of the finish due to methods of spraying used and to the proper preparation and rubbing of the under coats.

I trust that the above information will give you the assurance which you require as to our ability to meet all of the conditions involved in the use of Duco by any or all of the units of the General Motors Corporation.

Very truly yours,

W. P. ALLEN (Stamp)
GENERAL MANAGER.

WPA:M

Defendant's Exhibit (GM) No. 116

January 25, 1924

MINUTES OF THE MEETING OF THE PAINT AND ENAMEL COMMITTEE HELD AT THE GENERAL MOTORS BUILDING, DETROIT, JANUARY 22nd.

The following men were present at the meeting:

F. O. Clements, Chairman, General Motors Research Corp., Dayton.

E. L. Bergland, General Motors Corp., Detroit.

H. L. Weckler, Buick Motor Company, Detroit.

W. M. Phillips, General Motors Corp., Detroit.

A. U. Widman, Cadillac Motor Car Co., Detroit.

H. C. Mougey, General Motors Research Corp., Dayton.

F. L. Chase, General Motors Research Corp., Dayton.

E. H. Priebe, Cadillac Motor Car Co., Detroit.

R. S. Rogers, Oakland Motor Car Co., Pontiac, Mich.

Robert Hydmen General Motors of Canada, Ltd. Oshawa.

Joseph Liberty, Cadillac Motor Car Co., Detroit.

DUCO SITUATION

The reply of Mr. W. P. Allen, of the DuPont Company to a list of questions submitted by us was read. The questions and Mr. Allen's replies are given below.

Question—What can we tell them about the ability to obtain Duco, both as to samples and as to material for regular production? And what amount of time is necessary between placing an order and receiving the Duco?

Answer—We are now able to furnish both samples and material for regular production in all established colors in the amounts shown under Question 2. Both samples and orders for regular production in established colors can be shipped within ten days from receipt of order.

Question—Will the sources of supply and manufacturing processes be in such a state that we can promise our folks that they can obtain all the Duco that they desire for 1925 production? And how soon could they start to obtain sufficient amounts for experimental production?

Answer—Our present capacity for the manufacture of Duco is 35,000 gallons per month, by which approximately 10,000 gallons is now being used. This capacity can be increased to 50,000 gallons per month on four months' notice and to 100,000 gallons per month on six months' notice. These figures are based on the assumption that the greater part of our production will be confined to comparatively few colors, which has been our experience in the automobile industry to date. The complexity of color formulas necessary to obtain desired shades is also an important factor affecting productive capacity, and it should be to the interest of both the General Motors Corporation and ourselves to standardize wherever possible on colors which do not require the use of a large number of pigments. Our experience to date leads us to believe that many varnish or paint colors which we have been asked to match contain only one or two pigments, whereas in our case, in addition to using the same basic pigments, we are obliged to use several other

—2—

colors in very small amounts to offset the difference in effect, resulting from the difference between our vehicle and that used in paint and varnish. It would, therefore, be mutually advantageous if we could be consulted before any of the General Motors units reach a definite decision as to the exact shade desired for any particular job.

As you know, our chief difficulty, in so far as quantity production is concerned, has been due to a shortage in

the production of butyl alcohol, which in turn was due to manufacturing difficulties and also lack of capacity on the part of the one manufacturer of this chemical. I am glad to be able to advise you that the Commercial Solvents Corporation have discovered the cause of their manufacturing difficulties and their plant at Terre Haute is now producing to capacity. In addition to this, a new plant at Peoria has been completed and will in all probability be operating at capacity by the first of February. These two factories will provide for all of the expected consumption in the immediate future and can be expanded in a short time if the demands of the business require it. In addition to this, we have purchased butyl alcohol of foreign manufacture and crude fusel oil of foreign production in an amount which is equivalent to 450,000 gallons of Duco and Thinner. This material constitutes an insurance fund which will take care of any shortage in solvents from any cause for a considerable period of time.

Question—What can we tell them about the present situation in regard to matching colors?

Answer—If the color can be obtained with pigments that are readily available, we can match samples within three weeks; otherwise, it may require as long as eight weeks, but we can tell at the end of one week after receiving the sample which one of these two periods will be required. In this connection it will be of considerable assistance to us if when the sample is submitted we could be advised whether an exact match is absolutely necessary or whether an approximate match would be acceptable.

Question—What can we tell them in regard to the possibilities of obtaining a high-lustre finish without sacrificing the present desirable qualities of toughness, ease of rubbing, good looking properties, etc?

Answer—To date we have been unable to obtain a high-lustre finish comparable to the varnish finish without sacrificing some of the present desirable qualities of Duco. We have, however, under study at the present time modifications of our formulas which should improve to a marked degree the lustre now being obtained. Some additional research, however, is necessary before these modifications can be offered to the Motors units. We have seen recently at the Oakland Plant jobs prepared for the New York Automobile Show which have a very high degree of lustre obtained without rubbing by polishing and waxing.

—3—

Question—Is there any possibility of obtaining a high-lustre finish without rubbing and polishing?

Answer—We know of no such possibility at this time, if the high lustre varnish finish is used as the standard. As mentioned under Question 4, the Oakland Company is succeeding in obtaining a lustre which is much higher than has been obtained in the past without rubbing but not without polishing. We might add that there is a marked effect on the lustre of the finish due to methods of spraying used and to the proper preparation and rubbing of the under coats.

THE OXVAR PROCESS

Mr. Phillips discussed the Oxvar process and gave copies of his reports to each of the men present at the meeting. Briefly, the Oxvar process consists in dipping the wood parts in a heavy black enamel before the parts are assembled. This eliminates the use of glue and replaces it with black enamel in the joints. The joints are all secured by screws, bolts, or other mechanical fastenings.

The black enamel is then baked 4 hours at 200° F., by which time the black enamel is set up hard enough so that the wood frames may be subjected to much

higher temperatures. The Oxford Varnish Company claim that by this process the moisture is sealed in the wood and the wood does not dry out on subsequent baking at temperatures sufficiently high to bake regular high heat black enamel on the bodies. To substantiate their claim, the Oxford Varnish Company submitted a report made by the Detroit Testing Laboratory in which moisture determinations were made before and after samples of wood were treated by the Oxvar process and baked 3 hours at 300° F. Unfortunately, the moisture determinations were made by the Detroit Testing Laboratory after samples had been transferred from the plant at Toledo, where the heating tests were run, to the Detroit Testing Laboratory, where the moisture tests were made, and during this interval of time it may be that the moisture content in the wood changed so greatly as to make the results reported by the Detroit Testing Laboratory of no value.

Tests made at the General Motors Research Laboratory indicate that wood, either untreated, treated with sodium silicate solution or treated by the Oxvar process loses practically all of its moisture when subjected to baking conditions similar to those used in production in baking high heat black enamel. In presenting the subject of the Oxvar process, Mr. Phillips made the following statement:

> "In the use of this material, it is necessary to put the frame together in such a way that screws and metal stays will hold the body together, as but little dependence can be put on the cemented joints. In the opinion of some of our body builders this is also true of glued joints. It seems reasonable to believe that the cemented wood should be less liable to warp than untreated wood and it is appeared that there was less warping of frames in baking than is ordinarily the case."

EFFECT OF HEAT ON GLUE JOINTS

MR. WECKLER'S EXPERIENCE: Mr. Weckler discussed his experience with the effect of high temperature baking on wood and glue joints at the Buick. According to Mr. Weckler's experiences, the present Buick practice seems to be the practical limit in baking severity. When Mr. Weckler tried baking at temperatures necessary for high bake enamel, he found that the glue joints were injured. Mr. Weckler stated that several years ago the Buick put out a large number of cars using low bake black enamel, similar to the present Chevrolet practice and had no difficulty with the effect of heats on glue joints when baked according to the requirements of low bake black enamel. For purposes of record, the heats given at the Buick at present are tabulated below:

1 hour 20 mins. at 275°F.
1 hour 20 mins. at 220°F.
1 hour 20 mins. at 220°F.
1 hour 20 mins. at 200°F.
1 hour 15 mins. at 300°F.
1 hour 15 mins. at 300°F.

MR. ROGERS' EXPERIENCE: Mr. Rogers of the Oakland reported that the Oakland had had some complaints on glue joints on some of the first cars that were put out this year and that this trouble had been blamed on too high baking temperatures. However, the cars on which the complaints were made had been air dried on a straight air dry schedule as they were finished at the Oakland plant before any ovens were installed.

MR. MOUGEY'S EXPERIENCE: Mr. Mougey reported that his investigations on glue joints have led him to draw the following conclusions:

1. In production plants glue joints are frequently made with such poor workmanship that the strength

of the joint is very low. Unless much greater care is taken than is the case in ordinary production, glue joints should be reinforced with bolts or metal fittings so that no dependence is made on the strength of the glue joints.

2. Even in cases where workmanship is of the highest grade, it is desirable to reinforce glue joints by mechanical fittings, since even under the best conditions some poor glue joints will be made.

3. Properly made glue joints are not appreciably injured even when heated under such conditions as 48 hours at 250, 6 hours at 350, or 2 hours at 400, provided the wood has previously been slowly dried so that it is almost bone dry.

4. Regular glue joints using wood with a normal amount of water may be injured to such an extent that the joint separates if the wood is heated to temperatures as low as one hour at 300, if the heating is done without first drying the wood to a greater or

lesser extent. In other words, the bad effects of heat on glue joints are due to the warping of the wood and not to any injurious effect of the heat on the glue itself. A copy of Mr. Mougey's report will be mailed to the members at the meeting.

OAKLAND'S EXPERIENCE WITH DUCO

Mr. Rogers discussed the experiences of the Oakland after 6 months production on duco. He stated that the Oakland had had no complaints on the duco finish up-to-date and the Oakland is very rapidly getting the closed cars finished in duco as well as the open cars. The reaction of the dealers to the duco finish has been that they very greatly prefer the duco finish to the regular finishing varnish finish and report that they have trouble in disposing of closed cars finished with finishing varnish, stating that the customers desire

duco. Mr. Rogers stated that although the appearances of the duco finish on the Oakland cars is very much better now than it was when production on duco was started, he hopes to continually improve this appearance.

HIGH DURABILITY PAINT MATERIALS

CADILLAC: Mr. Priebe discussed his experience with a system recommended by the Valentine Varnish Company using the most durable paint and varnish materials that can be obtained. Mr. Priebe just finished 12 cars using this system, but stated that these more durable materials required so much greater drying time that the use of duco appeared to him to be a much better proposition. Cadillac is now finishing with duco, all roadsters except the blue ones. The blue duco has not yet been received from the duPont Company. All of the Cadillac roadsters finished in production with duco are given a top coat of finishing varnish. Mr. Widman stated that the dealers believe that a rubbed and polished finish on Cadillacs was not as satisfactory as a finishing varnish finish, as the customers require perfection in the appearance of the finish while it is on the salesroom floor.

BUICK: Mr. Weckler reported that the Flint Varnish Company claimed they have just developed a durable color and rubbing varnish which can be substituted in place of the present Buick color and rubbing varnish and that this varnish can then be coated with finishing varnish giving the same durability as if finishing varnish were applied over duco. Mr. Mougey stated that the tests on the Flint material made him believe that their claim might be correct. Mr. Weckler is making arrangements to put through a few cars in production using these new materials. In discussing the duco finish, attention was called to the fact that when finishing varnish is used over duco, the life of

the finish is limited by the life of the finishing varnish since no finishing varnish that has yet been developed begins to approach the durability of duco, and in order to secure the most durable results, duco should be used without a finishing varnish over it.

—6—

ADVERTISING CAMPAIGN

Owing to the fact that the appearance of a rubbed and polished duco job without finishing varnish is not equal to the appearance of a job with finishing varnish as a top coat, although the durability of the duco job is much greater, the Committee believed that it was desirable for a campaign of advertising to be started, calling attention to the durability of a rubbed and polished duco finish.

FUTURE POSSIBILITIES IN NEW MATERIALS

In discussing future possibilities, Mr. Mougey stated that the laboratory is working on a possibility of substituting rubber for the present primer and rough stuff coats. The advantages of the rubber are that rubber can be dried or "cured" in any desired thickness at one time, while paint or varnish, which depends on oxidation from the air for drying must be dried or "cured" in thin coats, and that it may be possible to dry or "cure" the rubber in an atmosphere with such a high humidity that no drying out or warping of the wood could take place. If this can be done, it may be possible to subject glue joints to high temperatures without any injury.

Defendant's Exhibit (GM) No. 117

6908

GENERAL MOTORS RESEARCH CORPORATION
DAYTON, OHIO.

January 26, 1924

Mr. A. P. Sloan, President,
General Motors Corporation,
224 West 57th St.,
New York, N. Y.

Dear Mr. Sloan:

The Paint & Enameling Committee met in Detroit, Tuesday, January 22. We are attaching copies of our minutes.

You will note that we have been promised adequate quantities of Duco, sufficient to meet any 1925 production demands; also, that the du Pont Company have corrected their solvent situation. This should make it possible to undertake the advertising campaign which was discussed several months ago but which was held up on account of du Pont's shortage of materials.

Commenting briefly upon some of the problems staring us in the face:

Oakland's experience has been quite satisfactory. Although a few of the early cars were poorly finished, due to the fact that Oakland did not have the equipment entirely installed to handle the job to the best advantage at the start, and some trouble may develop in the field from this cause, there have been no complaints up to date. Mr. Rogers, paint superintendent of the Oakland, states that, although the appearances of the Duco finish on the Oakland cars is very much better now that when production on Duco was started, he hopes to improve continually this appearance. Their customers appear to be perfectly satisfied with the lustre obtained without varnish; in fact, many customers held off purchasing Oaklands until they could be assured that they would receive the Duco finish.

4706

The Buick Company believe in Duco finish but cannot see how they can apply it to their production without increasing the cost of finishing per car.

We have a new color varnish, made by the Flint plant of the du Pont organization, that looks very promising. Tests on this material are being started at Buick.

Cadillac is turning out some very wonderful jobs in Duco; all roadsters are so finished, with the exception of the 'blues', which are still finished with paint materials. The du Pont Company, to date, has not been able to satisfy

them with a blue shade. They apply varnish over the Duco, claiming that their dealers and customers will not accept the low lustre. Cadillac in making progress with this finish very rapidly. However, the varnish over the Duco is still a bone of contention; it will fail long before the Duco and there will be a period in the car's life when the finish will look very disreputable. If we had a varnish that would live as long as the Duco, our troubles would be over. To date, we have not been able to find such a material.

It is our wish that Cadillac leave off the finishing varnish over the Duco. They insist that this cannot be done, unless the public be educated by an advertising campaign to the low-lustre finish. However, if a joint program of advertising be instituted by du Pont's and ourselves, it might force some of the 'General Motors' units to make a change before they are ready. It might be that such advertising should be confined to the Oakland Company, to start with. It is our understanding that both the du Pont Company and the Oakland are planning to advertise Duco in the immediate future.

Buick has asked that all the various finishes in 'General Motors' be again 'cost accounted', so that we can determine the progress that has been made in reducing costs;

for we are trying to secure a much more durable finish at less cost, if such be at all possible. Unquestionably, it has proven possible in the case of the Oakland.

I noticed at the Detroit Show that Marmon had a number of cars finished in Duco and there was another car on exhibit, finished by the Egyptian Lacquer Company, using a material of the same general nature as Duco.

As to vision, we are working very faithfully on all of the problems pertaining to better finishes. Our latest dream is to apply quite a considerable coating of rubber, vulcanizing it at a fairly high temperature with high humidity. This would give very wonderful adherence, put all the undercoats on at one operation, provide a material that would rub very easily, thereby establishing a fine surface. Duco would be applied over the undercoats thus obtained. Understand, this is a new development without much experimental data back of it yet, to verify its possibilities. It should shorten materially the time required to finish a car.

We want to assure you that this program is being pushed with all celerity.

Respectfully yours,

F. O. Clements

FOC—G

Note: Stamp on page 1 reads "Received Feb. 4, 1924—A. P. Sloan, Jr."

Defendant's Exhibit (GM) No. 118

6911

Letterhead of

E. I. DU PONT DE NEMOURS & COMPANY
Wilmington, Delaware
CELLULOSE PRODUCTS DEPARTMENT

January 31, 1924.
File 4-2c.

Mr. Alfred P. Sloan, Jr., President,
General Motors Corporation,
224 West 57th Street,
New York City.

DUCO FINISH

My dear Mr. Sloan:

I have just received yours of January 28th and thank you very much indeed for your very frank discussion of this matter. I am leaving this morning for Chicago and expect to be in Detroit and vicinity all of next week for the purpose of discussing the situation with respect to the use of Duco Finish with your various divisions. I shall follow your suggestions and hope that we can get this matter straightened out with each of the divisions in so far as there are any obstacles, real or imaginary, which need to be removed.

I shall avail myself of your invitation to discuss the whole proposition with you on my return.

Very truly yours,

/s/ WM. P. ALLEN
GENERAL MANAGER.

WPA:M

NOTE. "Received Feb. 1, 1924 A. P. Sloan, Jr." stamped at top of letter.

4709

Letterhead of

E. I. Du PONT de NEMOURS & COMPANY
Incorporated
WILMINGTON, DELAWARE
CELLULOSE PRODUCTS DEPARTMENT

March 5, 1924.

Mr. Alfred P. Sloan, Jr., President,
General Motors Corporation,
224 W. 57th Street,
New York City.

My dear Mr. Sloan:—

DUCO FINISH

I hoped by this time to have been able to have a thorough discussion with Mr. Bassett and also with Mr. Rice in an effort to bring the matter of the adoption of Duco by the Buick and Cadillac companies to a head, as I have advised you in previous correspondence. Unfortunately I have been laid up most of the time since I wrote you and am just getting about again, so that I have been unable to go to Detroit for this purpose. However, I wrote Mr. Bassett last week and have received a letter from his Secretary stating that he was in the south and would advise me on his return when it would be convenient for me to come to Flint to see him. I am writing you this for the reason that it has occurred to me you may be wondering whether further progress has been made on this matter.

I wish to thank you very much for your sympathetic interest in this whole problem because it is very easy for

those of us who are most directly concerned to become over-enthusiastic about a product which we make ourselves, and it is very re-assuring to have our own enthusiasms confirmed by the dispassionate

judgment of others who have no direct interest in the matter.

Yours very truly,

W. P. Allen
GENERAL MANAGER.

WPA:R

NOTE: Handwritten signature.

Defendant's Exhibit (GM) No. 118B

6914

March 30, 1926.

Mr. W. P. Allen, General Manager,
Cellulose Products Department,
E. I. DuPont deNemours & Company,
Wilmington, Delaware.

Dear Sir:-

Mr. Sloan received your letter of March 5th on the subject of 'Duco' finish. This should have been acknowledged more promptly but for the pressure he has been working under trying to get out our annual report.

He is very much interested in the subject and especially in Buick's attitude toward 'Duco' which he considers a very important matter. Will you be good enough to keep him advised of your negotiations with Mr. Bassett. He will appreciate very much your doing so.

Very truly yours,

ASB/K

Secretary to the President.

4712

Defendant's Exhibit (GM) No. 119

6915

Letterhead of

E. I. DU PONT DE NEMOURS & COMPANY

WILMINGTON, DELAWARE.

CELLULOSE PRODUCTS DEPARTMENT

March 21, 1924.

Mr. Alfred P. Sloan, President,
General Motors Corporation,
224 West 57th Street,
New York City.

Dear Mr. Sloan:

DUCO FINISH

Acknowledging Mr. Brandt's letter of March 20th regarding our negotiations with Mr. Bassett on Duco Finish, I advise you that I was in Detroit last week and went into this matter very thoroughly with Mr. Bassett at Flint. Several days later, Mr. Bassett, Mr. Durham, Mr. Weckler, Mr. Brown and Mr. Strong met me at the Oakland factory where a very thorough examination of Oakland's methods was made. I believe that the whole Buick organization are convinced that the public will demand a more durable finish before long and it is Mr. Bassett's intention to begin the use of Duco Finish on the new Light Six. His feeling is that it would be very unwise in the case of Buick to take hold of this matter in the way that Mr. Hannum took hold of it, as he still feels that some sales resistance may be encountered on account of the absence of a high varnish lustre.

I believe, however, that he is convinced that durable finishes of the type of Duco will be used very generally in the future. If the new model finished with Duco is accepted well by the public, I have no doubt that he will follow it as quickly as

possible by changing over to this finish in his other models.

I also found that although Mr. Rice was away on an extensive trip while I was in Detroit, Mr. Widman and the other members of the organization seem now to be convinced that the satin finish will be acceptable to the public on Cadillacs, and to test this conclusion they are placing in the hands of all of their principal dealers cars finished in this manner.

Very truly yours,

/S/ Wm. P. Allen
General Manager.

WPA:M

Note. Stamp at top of letter "Received Mar 22 1924 A. P. Sloan, Jr."

Defendant's Exhibit (GM) No. 120

LETTERHEAD OF
BUICK MOTOR COMPANY
Flint, Michigan

6917

April 16. 1924.

Mr. C. S. Mott, Vice Pres.,
General Motors Corporation,
Detroit, Michigan.

Re: Duco Paint

Dear C. S.—

Mr. Allen, General Manager of this department from Wilmington, came to Flint a couple of weeks ago and we requested samples of paint from him in colors nearer to what we would like to use for 1925. We again asked Mr. Allen to come up here and be here today if possible, but he could not come and sent his assistant, Mr. Moosman.

We had eight or nine sample jobs to go over which we did and at a conference held afterward at which were present Messrs. Strong, Churchill, Durham, Browne, Mullin and Mr. Williams of the DuPont Company, we were advised by Mr. Moosman not to atempt to go to all models on Duco at one time. He suggested that we take one or two models of the line and let them develop a color which would be satisfactory and then paint those jobs and send them out into the territory. We would thereby get our factory experience in handling the new type of paint as well as the reflection from the territory as to whether or not there would be any sales resistance.

We have accordingly selected the 54 and 55 open cars and are suggesting to Fisher that they take the 54-C and 51 closed models and do the same thing with them for us. This will give us a little more time to develop better colors for the blue jobs. Our next plan was to take the roadsters on 114" and 120" wheel base and try those in Duco, gradually working into the entire production when we feel sure

of our paint, our own success in handling it and our own success in selling it.

Personally I feel that Duco is a good thing and has come to stay, but I think we have all got to learn a little something about the proper method of handling it on cars that run into more expensive list prices.

All present at the meeting concluded that this program was the safest and best to follow and I thought it best to advise you what progress we are making with the Duco proposition.

Very truly yours,

H. H. BASSETT
President and General Manager.

HHB-o.

Defendant's Exhibit (GM) No. 120A

E. I. DU PONT DE NEMOURS & COMPANY
INCORPORATED
DIME SAVINGS BANK BUILDING
DETROIT, MICH.

SALES DEPARTMENT

6919

May 2, 1924

E. M. Flaherty, Director of Sales

Report ending April 30, 1924

Buick Motor Co. - Fisher corresponding Production

The developments at Buick drawn out over a lengthy period have come to a head rapidly the past month.

Early in April Mr. Allen and the writer visited Buick and Mr. Bassett, General Manager asked us to prepare bodies in Dark and light blue that he may show the Sales Dept., what we were capable of producing. You are familiar with the attitude Buick's Paint Supt., has always taken toward Duco and in order to use his experience as a painter we had to attempt to do this work in an entirely separate division of the company. This move riled the Superintendent and he completed some jobs for spite and did exactly as we had planned the results being very good Duco jobs. The proposition was then turned over to him and approximately eight or ten jobs were put through among them a 384 blue, 537 Sage Brush green and the remainder 367 Blue. The 384 Blue was left dull and the sage brush green likewise; the 367 were all polished. An attempt was made to put through a 533 and 401 Blue without the use of ground coats and these lacked hiding power, so were not assembled.

Messrs. Bassett, Moosmann, Strong, Churchill (of Buick Sales) Durham, Brown, Mullin, Weckler, Prahl and self examined these jobs on April 15th. At this conference we learned Bassett had in mind turning the entire Buick production into Duco. Mr. Moosmann discouraged this and stated he felt it wise to feel our way with one or two models at a time. It was then agreed that provided we could finish up a few satisfactory jobs in Sage Brush Green to start the use of same on 1925 models 54 and 55 and the Fisher corresponding closed models 51 and 540. Mr. Bassett was agitate that we had not matched their blues, but we had no such understanding, so he then requested us to match their light blue for models 49 and Dark blue for closed models 48. Mr. Moosmann took with him a ventilator from a 48 and a chip representing 49. The Sales Dept., would not consider a straight Duco job, thinking this was a future development.

In the meantime we are bringing through other sage brush green work and these will be ready for inspection on May 5th two of these four bodies are oven ground coats and two without at Parlin's request. In all of this work the V.E.P. products from St. Louis have been used as surfacing coats and they have proven very satisfactory to date.

4717

Mr. Bassett has put it up to us to sell Fisher and while I have seen Hurley, I will try to get to see Mr. Fisher with Mr. Moosmann on his next visit here. Hurley has put through two or three jobs the past week and although I have not seen them Mr. Hurley says they are far superior to any work he has done to date. In this work he has used Kinsh-Mason under-coats, the same as used by Lynch on Oakland closed work and used almost elxlusively on all Fisher work. He has formulated a polishing compound that he stated looks like the answer to the polishing proposition Here I would add that we have apparently been content to let the Duco user do all the work on this important problem. I note from the letters of information written at Parlin to prospective refinishers that oil, rotten stone and sand paper are still recommended and as this is the one stumbling block - I think some effort could be put on this proposition to good advantage by our laboratories.

Summarizing the work at Buick over the past month the present out look is some Buick business for 1925. This prospect will require close attention and we are planning to do all that is possible to cooperate accordingly.

CADILLAC MOTOR CAR COMPANY

This month has brought no new developments at Cadillac other than they are requesting Fisher put through a few closed jobs occasionally. As near as can determine Fisher is cooperating in this request. We have yet offered Cadillac no solution of the Blue material for their roadster production and would like your comments on this subject. It seems that our color card had a long list of blues and we should certainly be able to give them a satisfactory shade.

FRANKLIN MANUFACTURING COMPANY

Have put in two or three days a week here for the past three weeks and before the kinks are worked out for 100% Duco production two or more visits will probably be necessary. A study of operations found here made it a hopeless job to attempt to remedy by any other methods than to forget the past and start over.

Found the materials used for undercoating, so inferior in quality it necessitated the use of Duco for surfacing material and instead of getting the surface with under-coats. Excessive coats of Duco were applied and rubbed between coats. This not only made very expensive rubbing operations but the use of Duco in excessive coats is detrimental, as we have experienced in the past.

Following are operations as I found them with comments, and a tentative set of specifications offered.

"Present Operations on Duco"

1 - Body received in bare metal.
2 - Cleaned with gas.
3 - Prime valentine long oil (Dry 6 hours 160 degrees F)
4 - Spot glaze - Lead Putty (Dry 1-1/4 hours 160 degrees F)
5 - 1st Coat Surfacers " " "
6 - 2nd " " " " "

7 - 3rd Coat Surfacer (Dry 1-1/4 hours 160 degrees F)
8 - Rub Dry Sand
9 - 2nd coat Primer Dry 8 hours
10 - Spot Putty 1-1/4 hours Dry
11 - 1st Coat Duco 1/2 hour Air Dry
12 - 2nd " " 3 " " "
13 - Rub with 240 paper and pumice (FF)
14 - 3rd Coat Duco 1/2 hour air dry
15 - 4th " " 3 " " "
16 - Rub Top Coat or Varnish V.A.V. Finishing

"Comments on Present Operations"

Operation No. 1 O.K.
" " 2 O.K. if high test Gas is used
" " 3 Primer too long in oil
" " 4 Glaze is lead coat should be oxide
" " 5 Excess surface coats and material used very poor - carries no binder and can be easily removed with sand paper - offers practically no resistance. This means that same is ready attached by Duco solvents.
Operation No. 9 2nd coat prime unnecessary
" " 10 Spot putty too short drying time and nature of same is lead. Duco effects every spot of putty on job, leaving sinking effect.
Operation No.11 Duco coats should have 1 hour air dry or 1/2 hour at 120 between coats.
Operation No.12 Where body is to be dull no rubbing between coats necessary - unless top coat is to carry clear viscolac. In this case last coat Duco should be scuffed or rubbed lightly.
Operation No.13 Three coats Duco sufficient where varnish is used - a 4th very light coat may be applied where finish is left in satin finish. In any event avoid excess coats.
Operation No.14 Note you are useing Duco to obtain surface by rubbing between coats and parts of body are getting six and eight coats. This is expensive and unnecessary and detrimental. Besides Duco magnigies defects, hence more care is necessary in preparing under coats and surface for Duco finishes than Varnish.

"Proposed Duco Schedule"

1 - Alumimum Body - Clean with high test gas.
Steel Body - Clean with No. Deoxidine
In this operation, wipe off entire body with gas. Brush on No. 5 Deoxidine. Go over entire surface with steel wool. Wash off with hot water. No water break indicates clear surface.

2 - Prime with ready prepared Acme. Dry six hours @ 160 deg. F.

3 - Glaze body solid. Oxide Glaze.

- Apply surfacer immediately by spray. Drying glaze and surfacer together. 6 hours @ 160 deg.F.

5 - Additional surfacer coat if necessary. Air dry over night or 8 hours @ 160 deg.F. Found 2 additional coats necessary 6 hours 160 deg. between coats.

6 - Water sand using 220-240 paper. Do not allow steel body to stand over night after this rubbing operation, unless same can be re-scuffed. This is a precaution to prevent rust.

7 - Tack rag.

8 - First coat Duco air dry one hour.

9 - Second coat Duco air dry one hour.

10 - Third coat Duco - 3 hours @ 120 deg. F., if to be rubbed and polished or varnished.

11 - If finish is to be dull, operation 10 should be a very light coat Duco.

12 - Rubbing for Varnish use FF. pumice and H20.

13 - Rub and polish, use special preparation.

14 - Thin Duco a proximately 50/50.

15 - Use DeVilbiss apparatus, type "K" gun "F" nozzle "F" needle.

16 - Have material brought to spray gun through gravity feed, same should have approximately 10 ft. fall.

17 - Air pressure should be 65 to 70 lbs with gun open.

1 - Do not use excessive number coats Duco. This is detrimental.
2 - Do not attempt to get surface by use of Duco, this is, applying coats and rubbing between same, get your surface first.
3 - Do not attempt use reasure tank for Duco. This brings water and oil from line in contact with Duco. Will prove detrimental.
4 - Do not attempt to patch panels more than 36 hours after or ginally sprayed. Where patching is necessary spray in the entire panel.

5 - Do not attempt to mix material by opening through top of can. Invert same, cut out the bottom. In this way all settled materials are put back in solution.

After a few experimental bodies were put through following the proposed schedule the Acme material was adopted as standard. In addition to the troubles mentioned off color has caused a lot of grief. It seems each succeeding shipment of Biege has gotten darker until now the color is slate and it is impossible to do any patch work or match hoods. A sample of color varnish was recently sent the factory showing the shade desired, and on receipt of this shipment it will probably be necessary to re-work the material on hand.

Found organization here in a very hectic and impatient mood and yet they do not feel that the proposition is shaping up rapdily enough. I wrote Mr. Dunk the following memorandum on my last visit.

Conditions at present in the Paint Shop are considerably improved over those found two weeks ago. The change in the surfacing materials used was necessary to bring results. We found that the old system of surfacing was so poor, and such inferior materials were used that it was necessary to use Duco as a surfacing material. This is against our recommendations, as Duco is a finish - not a surfacer, and by continually applying Duco and rubbing to surfaces to fill file marks, an unussualy heavy film is deposited in spots that will cause trouble; and incidently it is an expensive method.

The old method necessitated two rubs on Duco where varnish was applied, and one rub where left dull. We now eliminate one Duco rub for varnish finish job. This is a decided saving in rubbing along, not taking into consideration the expense involved in applying excessive Duco coats. The proposed method will require a little more time and expense to surface the job, probably four days, but when they leave the surface deck, no further surfacing is required. The materials recommended have proven entirely satisfactory for use under Duco, and after the Shop Superintendent has had time to work out details and break his men in the use of these new undercoatings, specifications can be drawn accordingly.

The proposed schedule I drew up on my first trip was tentative and, of course, will require revisions to fit in with the grade and quality of work Franklin specify. This was simply offered to give us a start; and similar methods are in use at other automobile factories.

As far as drying times between coats, I would suggest Mr. Holcomb carry out his present schedule until such time as he can cut down same without sacrificing durability.

It is my understanding that the remaining jobs in color varnish will be handled as follows:

Rub down, spot putty, and apply coat of surfacer over same, rub and finish in Duco. This method meets with our approval until these jobs are worked off.

I note a few chipped wheels around the hubs, and on investigation I find a lead putty directly under the Duco and this is the reason for the poor adhesion. I would suggest where putty is necessary on wheels the oxide material be used.

It is unfortunate that we experience the off color trouble at this time, and as soon as the new matched material now in process of manufacture at the factory is received, I believe the best policy to pursue will be to return the present material and have brought to the proper shade.

As yet we have not accomplished our aim on polished work, and suggest our next attempt be made on a body rubbed with triple "F" pumice and rotten stone. We find in using "FF" pumice, it carries sufficient coarse material to scratch. These would be filled by a coat of varnish, but polish simply magnifies them.

The whole proposition is shaping up nicely, and I feel it only requires a little time and patience to have the shop running along the proposed methods in harmony.

I would suggest watching the following and have carried out as recommended:

1. Use minimum number Duco coats.
2. Thoroughly oxidize under coats. Present drying times O.K.
3. Keep glaze under surfacer.
4. Agitate Duco thoroughly before using.
5. When jobs leave surface deck, no further surfacing should be necessary.
6. In patching, spray in entire panel.
7. On wheels where Duco is used, use oxide glaze instead of lead putty."

In addition to the above conditions they have on hand approximately 200 closed jobs received in color varnish that they now want to switch to Duco. I suggested these be rubbed down to surfacer coats and a coat of acme surfacer to applied and rubbed. The Duco schedule can then be applied. I seriously doubt if we can produce a polish job here of sufficient luster to please the Sales Dept. In this event they will have a dull and varnish finish as standards. The drying times offered may seem a trifle long but it is better to be able to cut them down where necessary rather than to have to increase them. Lewis has not been in on the revision and it is doubtful if he will return to Franklin he is now on a months leave of absence and putting in his time at the Syracuse Duco Co., a refinish outfit started by Miller, Lewis and a third Franklin man. Lewis' sincerity and intergity has been questioned and understand he is under investigation at this time. Haas & Waldstim are putting in experimental jobs here and Miller will keep you posted on progress they make.

OAKLAND MOTOR CAR COMPANY

Production in April did not exceed 100 open jobs per day at any time. The past week the plant has been closed entirely for inventory. May production calls for 85 open and 17 closed jobs per day.

FISHER BODY (Oakland Closed)

No new work had been done here doing the month. Considerable time and necessary expense has been involved in hospital work, due to the rust epidemic found in closed car storage. A large percentage of jobs have been refinished completely. Blame for this trouble has been placed on the cleaner used or the water. No insinuations have been made recently that Duco could cause the condition mentioned. The past week Fisher delivered Oakland 15 jobs per day, but there are no indications of any renewed activities at this plant before July 1st.

HUPP MOTOR CAR CORP.

The fact that beginning May 1st, touring car production was put in Duco is a good indication that we are gradually gaining confidence of the Hupp officials. After the trouble in March, at which time the paint superintendent resigned we were skeptical about our immediate future. Since that time we have had several conferences with Mr. Nickerson and he states emphatically that he is more pleased with his Duco work since Mr. Carroll has taken charge than during Pettibone's stay. He further stated that his costs had decreased to some extent which is gratifying to him. The past month Hupp has put several cars in colors, with an idea of a change in color some time in the future. To date there is nothing definite on this but we will give you all the advance information possible.

should any change be contemplated. Present production 180 per day has remained so through the winter and spring.

CHEVROLET MOTOR COMPANY

Approximately 600 deluxe touring duco jobs were done in April at the Flint and St. Louis plants. These were done in a way not entirely satisfactory to us principally because the Chevrolet paint shops are layed out for high bake enamel and any departure from this method causes confusion, due to lack of floor space and inexperienced men. The Chevrolet metal is universally of such quality that extensive surfacing is not required, so in doing the 600 jobs some were primed with a rubber coat and some with Flint flex. Flint flex gave better results, but for some reason it is unobtainable at this time so rubber coats are being used. At present varnish is used as a finish and while the rubber under-coat is apparently entirely satisfactory where the job is varnished there is some question as to its desirability for polished work. It seems that rubber lays so close to the metal that waves in the metal not visible to the naked eye are not filled and are magnifyied when the Duco is polished leaving a very undesirable, pitted surface, so much so that the type work turned out todate as polished work could not be considered for production. In order to prove that the rubber coat does not answer the requirements, we are planning experimental jobs with primer and surfacers. Then there is a possibility that the 596 Grey Duco is too high in softener. I reported this last week in April and requested investigation, but to date have had no reply. Certainly this material acts different from other Duco materials in use at the various units as it drags and instead of leaving a clear polished surface; appears At any rate no blame has been placed on Duco to date, but our investigations may lead us to conclude that an error has been made in this formulation. You will be advised of our results.

It is our plan to unsell Knudsen on varnish as a finish, but in order to do this we must make a great deal better showing than to date and this must be done under conditions in conformity with Chevrolet paint shop lay outs.

May's schedule calls for 800 jobs in Duco of this same model at Oakland California and St. Louis, each and 700 each at the Tarrytown, N.Y. and Flint plants. We are working the troubles out at Flint with MacQuaid and as soon as this is done we will visit Tarrytown and St. Louis to start them off and we are training a man to handle the coast work.

This account will require a great deal of attention for a few weeks and I feel colors will come to stay on Chevrolets. It is necessary we follow this account closely as their plants are all layed out for high temperature flow coat work and should we fail it will be an easy matter to substitute Flint flex or a similar product.

GENERAL MOTORS TRUCK

This concern is awaiting our time to do a few jobs for them. Lynch of Fisher body recently finished a car in Duco for Mr. Day, Pres., of General Motors Truck and I understand he is highly pleased with it.

FISHER BODY - CLEVELAND and ST. LOUIS

We continue to get the Chevrolet moulding and instrument board business at the above plants. On my last visit to Cleveland. Mr. Hawley, Supt., was preparing to run some experimental jobs using Duco, do not know the cut-come of this proposed work, but will check up at St. Louis I understand they are making their own thinner, supposedly a 50/50 mixture of acetone and alcohol. I have not had an opportunity to see it used, but on my next trip will make a point to do so and fear they will encounter trouble with such a mixture. The Detroit Fisher plants 9 and 18 are using small quantities of 412 for instruments board work.

AMERICAN AUTO TRIMMING COMPANY
Make Paiges and Jewetts

These people purchased sufficient material 401 Blue in April to do approximately 100 jobs. To date twenty have been put in Duco and one polished. All jobs done to date are Jewetts. Owing to my other work I have given this very little personal attention, but plan to get in on it very soon. It seems the Jewett offidials are quite interested, but in talking to the foreman around the shops I feel sure American Auto Trimming are not sold on the idea and they will bear close following that they do not slip in such a way that will be detrimental to us.

AMERICAN MOTOR BODY COMPANY

The American Motor Body of Detroit is the main plant of the American Motor Body of Philadelphia with whom you have had some dealings. They do contract work and are princapally interested in the Gray at present We finished up 8 or 10 jobs there recently and find our coats are too high to compare with their present work, which is very poor mechanically. I do feel there is a possibility of using some Duco at their Philadelphia plant on a new Bus line and will stick close to Mr. Champion, Manager here. I would suggest some ~~fmurxsffixtxis~~ of our officals see Chas. Schwab of American Motor Body as he is the big gun in this outfit.

CHRYSLER - MAXWELL

No work was attempted in April at either of the above units. Recently following Mr. Flaherty's letter to Mr. Chrysler however, we have been requested to assist them to do 10 jobs at the Chrysler plant. We have mailed Parlin a sample of the blue they desire and on receipt of the material we will give them all the attention necessary. Recently the Purchasing Agent at Maxwell called me and asked if we were in a position to furnish Duco in quantities and asked me to call on him to date however I have not found an opportunity to do this.

BRIGGS MANUFACTURING COMPANY

Plan further Hudson and Essex work as soon as we can find time to assist them.

C. R. WILSON BODY COMPANY

Experimental work only have one Reo on road test and plan to do an

additional car in the next two weeks. This particular job will be for the President of the Company.

STUDEBAKER CORP.

Cannot seem to further interest them, although it is rumored that they are much interest in Pyroxylin coatings and understand Glidden has made great studies here.

RICKENBACKER MOTOR CAR COMPANY

Uninterested to date.

GENERAL

In addition to the car and body builders the office has referred many refinish prospects to us, but to date have been unable to give them any attention.

During the month of April business has continued very dull in fact the motor units have decreased in production to a marked extent. There are no present indications of increased production in the near future.

R. C. Williams

RCW:JPP

NOTE: 1568 in upper right corner. "h" inserted in word month in third paragraph on page two. Circular stamp reads Du Pont Fabrikoid at top of pages 2 to 8. The word "along" corrected to "alone" in second paragraph on page five. The word "clipped" corrected to "chipped" in seventh paragraph of page five. The word "whope" corrected to "whole" on page five. The word "Ulass" corrected to "Mass" on page six. The word "Carroll" inserted in blank space in last paragraph of page six. On page eight second and third paragraphs are checked at right margin. 13 is stamped along right margins of all pages.

Defendant's Exhibit (GM) No. 121

GENERAL MOTORS CORPORATION
Detroit, Mich.

August 31st, 1923.

Messrs. H. H. Rice,
A. B. C. Hardy.

I am enclosing herewith copy of report of Paint and Enamel Committee, which I presume will be self-explanatory.

The Oakland is going to 100% Duco for open cars, and I think that the idea has been sold to Mr. Fred Fisher and it is likely that Oakland will go to 100% Duco on closed jobs. The matter is very important to each Car Division that they post themselves thoroughly regarding the advantages to be derived. It was suggested that this report be gone over very carefully. A representative of this Committee will undoubtedly attend the next Car Division Managers' meeting here in Detroit, to be held in a couple of weeks, at which time the subject can be further discussed.

In the meantime, Mr. Hannum has expressed his willingness and desire to cooperate with other Divisions desiring information and without doubt he would be very glad to have you and any of your experts visit his plant so that you may be satisfied as to the quality of work that he is producing and of any advantages that he can show you

Yours very truly,

/s/ C. S. Mott
Vice President.

6929

cc to Mr. Sloan

cc to Mr. Hannum: This is a copy of what I am sending to other Car Divisions and I hope it meets with your approval.

cc to Messrs. H. H. Bassett & A.P. Sloan: The above is copy of letter I am sending out. I have already delivered to you a copy of the report.

NOTE. At top are stamp "Received Sep 4 1923" and illegible initials, possibly Mr. Sloan's. Lower right is stamped box with stamped initials A. P. S., J. L. P., P. F., W. J., A. T. B. and W. E. A. Pencil check-marks follow A P S and A T B. There is checkmark after "A. P. Sloan" lower right.

Defendant's Exhibit (GM) No. 122

69930

GENERAL MOTORS RESEARCH CORPORATION

DAYTON, OHIO.

October 29, 1923

Mr. A. P. Sloan, Jr., President,
General Motors Corporation,
224 West 57th St.,
New York, N. Y.

Dear Mr. Sloan:

We are running into a great many interesting things in connection with the application of 'Duco' as a motor-car finish.

Our local agent here in Dayton has seven orders for closed cars, all based upon his ability to obtain 'Duco'-finished cars: in other words, these prospective buyers will cancel their orders if they can not secure jobs with this new finish.

Seemingly, there has been no criticism whatsoever from the public with reference to the lower-gloss finish; in fact, the public seem eager for it and the Dayton agency considers it one of the best talking points. I presume that Mr. Hannum has heard of a lot of similar experiences from the agencies in other parts of the country. I am sorry that we cannot begin to make some applications elsewhere in the organization.

Doctor Booge of the Wilmington Laboratories of the du Pont Company, dealing with paint and varnish problems, was here the other day. Indirectly he paid us a very high tribute by saying that we have fully awakened the paint and varnish folks and that they are doing untold quantities of work in trying to improve their own products. We are

seeing the results of this right along and are able to get very much better paint and varnish finishes. One of the 'paint' magazines bitterly complained of the work that was being done to undermine paints and varnishes; they wonder what our motive is and consider it unfair.

We have a new development that we are following up. The U. S. Rubber Company has learned how to put hard rubber into solution. This bakes out at fairly high temperatures and seems to give a pretty good finish. We know nothing about its durability and, of course, as in the case of every-

thing else, we find some faults that seem rather insurmountable. At the present minute, for instance, the finish is injured by gasoline. It dries quickly and is extremely cheap; it gives a high polish and is a very fine looking finish.

I think we have scarcely scratched the surface as yet and that the work of the Committee will bear fruit for quite a period of time.

The du Pont Company is thoroughly awake to our solvent situation; we are working jointly to find means of overcoming this difficulty in securing butyl alcohol.

Quite a while ago, Mr. du Pont suggested that cars ought to be able to sit out of doors day and night throughout the entire year without housing facilities and without detriment to the integrity of the car; this seemed like a very wild dream at the time. However, with some of these more durable finishes, it seems that this proposition will become an accomplished fact. I have had one car out of doors for the last three years seemingly without any ill effects so far

as deterioration is concerned. I believe that this vision of Mr. du Pont's can be realized now with 'Duco'.

This is rather a rambling letter; but I have thought that you would be interested in some of these later developments.

Very truly yours,

/s/ F. O. CLEMENTS
Director of Research

FOC-G

NOTE: Stamp top of page 1 "Received Oct 31 1923 A. P. Sloan, Jr."

Defendant's Exhibit (GM) No. 125

I

EXCERPTS
GENERAL PURCHASING COMMITTEE
RE
PRODUCTION SCHEDULE FORECASTS

General Purchasing Committee Minutes, April 18, 1924, page 2.

(d) Statistical Position of General Motors. Mr. Sloan advised that his office was in position to supply each month to the Purchasing Agents a report of the statistical position of General Motors in the field of production, sales to customers, etc., and that this information is available to Purchasing Agents for consideration in the conduct of their buying and negotiations with suppliers. This information will be regularly secured and distributed through the Secretary to all Purchasing Agents.

General Purchasing Committee Minutes, July 2, 1924, page 1.

Before taking up the program Mr. Sloan gave the members of the Committee his impressions gained on visits to 90 branches and distributors, and over 100 dealers located in 15 of the principal cities in the West including St. Louis, Kansas City, Los Angeles, San Francisco, Denver, Portland, Seattle, Spokane, Minneapolis, and St. Paul . . . . He stated that machinery is being set up to have production schedules properly controlled and control insisted upon. He dealt with the set-up of figures that should show the statistical position of General Motors and advised that beginning July 1 "Sales to Consumers" would be the index of General Motors business; that the divisions would set

up their own indices and the General Motors' index would be a composite of divisional indices. These indices would be used as a guide in setting production schedules from which the Purchasing Agents could reliably deal with suppliers as to quantities required.

General Purchasing Committee Minutes, September 5, 1924, page 1.

(a) Discussion of Statistical Position of General Motors as of July 31st, 1924. Reports of our statistical position as of June 30th and July 31st dealt with General Motors as a whole rather than by individual divisions. It is the opinion of the committee that monthly reports showing by division for the Car & Truck Group, Forecast of—

1 — Inventory (Total and raw material given separately.)
2 — Turn-over
3 — Production
4 — Sales to Consumers
5 — Finished stock on hand
6 — Commitments

which really constitute the divisional indices from which the General Motors' index is compiled, would be most helpful to the Committee in its work, and to the Purchasing Agents individually in their work. Mr. Sloan will furnish, through the Secretary such sheets dealing with the situation as of August 25th. Mr. Sloan will also supply us with sheets showing inventory turn-over figures for calendar years of 1922 and 1923 which may serve somewhat as guides. He will also supply copies of the plan governing Sales to Consumers which

has been worked out and submitted to the divisions. It was agreed that a letter from Mr. Sloan dealing with the plan for controlling production which manifestly would control the demand upon suppliers for their products and materials, which our Purchasing Agents could refer to in conversation or negotiations with suppliers, might strengthen our buying position by conveying to suppliers our efforts toward scientifically preventing wide fluctuations in demand resulting from drastic adjustments of Schedules. Such a letter will be written . . .

General Purchasing Committee Minutes, February 6, 1925, page 1.

(a) Discussion of Statistical Position of General Motors as of December 25, 1924. The items of particular interest to the committee are productive inventory and inventory turn-over. Ways and means of reducing inventory to the minimum consistent with uninterrupted production schedules were discussed. The existing practice of forecasting production schedules which are based on sales to consumers should result in a more even curve of production than ever heretofore obtained. If these forecasts are followed in releasing material the uniformity of current and anticipated demands should be reflected in lower inventories and commitments. It was suggested that particular attention be paid to the balancing of inventories and co-ordinating schedules for material and parts so as to keep this balance. A study of the systems for scheduling of purchases of parts and materials in effect in the several divisions will be made with a view to recommending for general adoption the system found to be the most efficient and economical . . .

Defendant's Exhibit (GM) No. 128 6936

January 18, 1926.

Mr. C. F. Kettering, Vice President,
General Motors Corporation,
Detroit, Michigan.

My dear Ket:-

Mr. Midgley came in to see me on Saturday and stated that he had gone over rubber research proposition with you and that he knew you had talked to me about it.

Briefly stated, Mr. Midgley wants to contact the operation in Dayton and in view of the fact that the entire cost of the activity for the year will not exceed $60,000, and in view of the fact that he appears to have good reasons, both psychological and practical why it should be done in Dayton, I am convinced that we ought to let him have his way and do it in such way surrounded by such atmosphere as the most effective workout will make possible. I assume that this is satisfactory to you.

Therefore, I am authorizing Midgley to go ahead and have given him a budget of $60,000 for the first year which I have also authorized with the Treasurer at Detroit.

If there is any reason why this does not appear to be constructive from your standpoint, will you be good enough to let me know. While the activity will, in a way, be separate from the research, at the same time I think it would be very necessary for you to look after it and I would suggest, if it is agreeable to you, that we delegate you as the Corporation's contact with Mr. Midgley in the premises.

Very truly yours,

PSJr./K

NOTE: Routing stamp has checks after A. P. S. and A. T. B.

4734

E

Defendant's Exhibit (GM) No. 129 69937

Letterhead of

GENERAL MOTORS CORPORATION
Detroit, Michigan

March 11, 1926

Mr. Alfred P. Sloan, Jr., President,
General Motors Corporation,
New York, New York.

My dear Mr. Sloan:

I am much worried about the rubber work undertaken by Mr. Midgley and think that I should tell you just how the situation appears to me and how I feel about it.

At the time I first talked to Mr. Midgley, which was on the train returning to Dayton from the New York Show, he told me of his talk with you and what he hoped to accomplish, saying that he knew positively that he could make commercially satisfactory rubber at a cost not exceeding $1.00 a pound and that the only problem confronting him was to bring this cost down and he expected to reduce it to about 35¢ a pound. I told him that I knew nothing whatever of the subject, but that I was under the impression from what I had heard that many of the leading chemists of Germany and other countries had spent many years of their best efforts in trying to do the same thing and had failed and that I, therefore, felt that, unless he possessed some secret unknown to them, he was up against an almost hopeless proposition. He told me that he had made a most exhaustive study of the subject and that he knew exactly what should be done and why everyone else had failed. He further told me that he was perfectly sure it would not take him more than three months to demonstrate his ideas. I told him that the Patent Department would render him all of the assistance in its power and that I would assign

Mr. George Lovett, who for many years was in charge of the chemical division of the Patent Office, to this work and that I would see that Mr. Lovett kept in close contact with him

Upon my return to Detroit a day or two later, I instructed Mr. Lovett to devote all of his time for the next few weeks in collecting material on the subject and to make this as exhaustive as was possible. Mr. Lovett did this and has collected, I believe, practically everything including patents that have ever been published on the question both in this country and abroad. Everything that he has so collected indicates the extreme difficulty of the subject and the fact that every substance or compound that might be employed for the purpose has been tried. Further, practically every one of these efforts including processes, etc. are covered by patents largely German.

Mr. Alfred P. Sloan—2 3-11-26

About a week after Mr. Midgley started his laboratory in Dayton, I called upon him and also called upon him each Saturday until week before last when I moved my family to Detroit. Upon each of my visits, he told me that he was not ready to see Mr. Lovett and it was not until last week that he did so, and I am enclosing you copy of Mr. Lovett's report to me of his visit and which may not, I am afraid, be very illuminating to you, but the situation is about as follows:

Mr. Midgley has so far devoted his efforts entirely to trying to make Isoprene out of cracked petroleum as he feels that this is cheaper than any other method heretofore used. The idea, however, is not new as it seems to be covered by a British patent. Further, even if he gets Isoprene

by his method, it will mean nothing as the real difficulty is to turn Isoprene into rubber. He has not told us how he expects to do this or if he is going to use any different process or introduce any different substances than those heretofore employed and unless he does do something of the kind, it will be utterly hopeless in my opinion for him to accomplish the result desired.

He has spent now two months of the three which he allotted as being necessary to complete the work and has, up to date, really accomplished nothing. This, I realize, is a harsh statement, but it is absolutely true. I do not believe that he has made any real effort to study the subject as he was totally ignorant of most of the patents and articles mentioned by Mr. Lovett to him and I cannot help but feel that he really has slight understanding of the problems involved and which are certainly very great.

I dislike writing you in this way very much, but I honestly feel that my duty to both you and the corporation requires me to do so.

I do not mean to say that the solving of the problem is an impossibility, but I do feel that, unless Midgley knows of some absolutely revolutionary and unknown method of turning Isoprene into rubber, his work should be stopped and I feel that he should be told to discontinue his present efforts, and should be instructed to procure or make some Isoprene by present, well known methods and then take this Isoprene and make commercial rubber from it. If he cannot do this, then, as I have before said, I think the entire undertaking should be discontinued because certainly the mere making of Isoprene from cracked petroleum will mean nothing whatever.

I will be very glad indeed to talk to you about this matter

when you next come to Detroit and if you have time to talk to Mr. Lovett, he can give you, I am sure, a much clearer explanation of the situation than I have done.

Yours very truly,

James McEvoy
Director Patent Section
General Technical Committee

JMcEs

NOTE: Stamp on page 1 reads "Received MAR 12 1926 A. P. Sloan, Jr."

COPY

Memo for file

March 6, 1926

On March 5 I visited The Hochwalp & Thomas Laboratories at 127 North Ludlow St., Dayton, where Mr. Midgely and his assistants are engaged in their chemical investigations. Mr. Midgely and both of his assistants were present and we had an interview in regard to the progress of the work to date.

Mr. Midgely outlined briefly the line of work on which they were now engaged as follows:

Starting with propylene dibromide of which they have a considerable amount obtained from the Ethyl Gas Laboratory, they have proceeded thus: Take 6000 c.c. of the propylene dibromide, the same amount of water and the same amount of 93% alcohol (denatured), also 2400 grams of sodium hydroxin. Mix these ingredients and distill in a fractionating apparatus. This process yields 4515 c.c. of brom propylenes or about 92% yield. Over 80% of the alcohol can be recovered.

The product includes about ⅓ alpha and ⅔ beta brom propylene. These can be separated by fractional distillation if the pure materials are wanted. However, the two can be used in ad mixture in the treatments which follow:

A. Use of Grignard Re-action.

Either the alpha or the beta brom propylene or the two mixed together can be treated by the Grignard reaction with magnesium from which is obtained a small yield of dimethyl penta diene, methyl penta diene, and hexa diene, also some polymers which, when separated with benzol, give a viscous oil, which is probably a high terpene. The solid residue remaining after the extraction with benzol when burned gives off the odor of burned rubber.

B. Using the Wurtz Re-action.

The brom propylenes are treated with sodium amalgam (approximately 5 grams of mercury to 1 of sodium). Upon setting the mixture aside evolution of heat and gas takes place. If decanted at this time and distilled a small yield

is obtained of a polymerized body, which does not readily distill with steam.

The product is lighter than water, thus indicating the elimination of halides. Samples of this product have been set aside to permit polymerization and there are now some indications of slight polymerization shown by small quantities of a white solid in the test tubes which have been exposed to the light.

Second Variation of the Wurtz Process

If the sodium amalgam is merely permitted to remain in contact with the brom propylenes, polymerization takes

place, as shown by a sample which had become completely solid, although it appeared, from inspection, that there was more amalgam in the tube than polymerized product.

THIRD VARIATION OF THE WURTZ PROCESS

They are now experimenting with the carrying out of the Wurtz reaction under pressure, using some of the old Tetra Ethyl lead containers, which are steel flasks of about 1 liter capacity. When the mixture is placed in the flasks and subjected to 50 pounds pressure under an atmosphere of nitrogen, no evidence is found of the evolution of gas unless the amalgam is too active or the reaction is hastened by the presence of a catalyst.

They have analyzed one sample of the product thus obtained and find that it yields a light polymerized oil. Mr. Midgely stated that the procedure according to the Grignard reaction would be commercially impracticable at present because of the high cost of the magnesium, but that the Wurtz re-action appeared to be commercially feasible. In this latter process, however, they were not yet able to obtain satisfactory yields.

The methods of keeping records were explained to me, which consisted in daily reports signed by the investigators and made out by the lady in charge of records, who has had

long experience in this class of work in the Ethyl Gas Laboratories. Up to the present time only one set of these reports has been kept but it was recommended that a second set be copied and sent to me, and that in the future carbon copies be made of these daily reports and also of the monthly reports, which are being made to Mr. Sloan, which carbon copies shall also be signed and shall be sent

to me in order to provide an additional record in case of some accident resulting in loss of the originals, as well as to keep Mr. McEvoy and myself advised as to the work being carried out.

Mr. Midgely stated that there was no necessity in the present stage of development for any further patent search in lieu of the fact that their line of work might change on a days notice. However, I left with him, for Mr. Hochwalt to study, the collection of patents which I have made covering the manufacture of dienes and the preparation of synthetic rubber.

I also left with them the copy of Gottlob's article published in the India Rubber Journal, and a copy of the bibliography of synthetic rubber prepared in the Research Laboratory.

G. A. Lovett
Patent Section,
General Technical Committee

GAL:EK

Defendant's Exhibit (GM) No. 130

6944

March 15, 1926.

Mr. James McEvoy,
General Motors Corporation,
Detroit, Michigan.

My dear McEvoy:-

I have your letter of March 11th dealing with the matter of Midgley and the work that he is doing. Naturally, I agree with you 100% and do not see how anybody could disagree that the first thing we should do is to get some picture of the prior art and it would appear to me that Midgley ought to have had enough experience to tackle that phase of it. On the other hand, of course, he is a research man first and foremost and probably is not giving that phase of it the consideration that he ought to.

I think, considering Midgley's past performances and the confidence that we all hold in his research ability, that we ought not to dictate too closely because it is important to keep up his morale and all that sort of thing. I realized at the time we went into this thing that he was wildly enthusiastic about the possibilities so far as accomplishing the result within a specific time was concerned. In other words, I just put that down as enthusiasm which is so necessary to get a thing of this kind accomplished at all. I went into it fully recognising that it was a problem that if it was solved at all certainly would not be solved within six months.

I think it is well worth letting it run along as we are. It is not costing us a great deal relatively and sometimes the most surprising things come out of developments of this character.

I expect to see Midgley within a few days and I will try to guide him along the lines that you indicate. I appreciate your keeping me posted and hope you will keep me in further contact with the patent end so that the most constructive result can be developed.

Very truly yours,

APSJr./K

NOTE: Routing stamp has checks after A. P. S. and A. T. B.

4742

E

Defendant's Exhibit (GM) No. 131

GENERAL MOTORS CORPORATION

DETROIT, MICHIGAN

6945

December 3, 1927

Mr. John L. Pratt, Vice President,
General Motors Corporation,
New York, New York.

My dear Mr. Pratt:

I am enclosing you copy of letter received by Mr. Lovett this morning from Mr. Midgley regarding certain new ideas he has respecting his rubber development. If you will get a copy of the November, 1926 issue of "Industrial and Engineering Chemistry" you will find several very interesting articles on the Guayule rubber situation.

Whether or not these articles have ever been read by Mr. Midgley I do not know, but as they disclose, and particularly the one by Mr. David Spence beginning on Page 1126, substantially everything so far as the production of a good quality of rubber is concerned, I am inclined to believe that he is familiar with them. The only single thing done by him that I have not as yet found is his statement that the quality of rubber can be improved by means of amino acid.

You will notice on Page 1128 under "Experiments on Shrub Preservation and Stabilization", that Mr. Spence refers to the work done by the Bureau of Standards and experiments made comparing the tensile strength, etc. of the Guayule rubber with Plantation rubber and which, so far as we can determine, are identically the same as those stressed by Midgley.

I am sorry that I have not a copy of the article in the Industrial and Engineering Chemistry, but the only one we have in the Research Library is bound up, but I am sure you can at least borrow it from the New York Public Library. The bulletin from the Bureau of Standards has not arrived, but I am hoping to get it later in the day and as soon as it does come, I will send it to you.

I feel exactly about this development of Mr. Midgley's as I have felt about his experiments in connection with synthetic rubber, namely, that he knows nothing whatever about the subject except what has been disclosed by other people and I would strongly urge, as I did over a year ago in connection with the synthetic rubber activities, that the whole operation be terminated.

Yours very truly,

James McEvoy

NOTE: Stamp reads "J. L. Pratt Answered—Noted—" 12 10 is written in the stamp.

E 4743

Defendant's Exhibit (GM) No. 132

6946

March 8, 1927.

Mr. Thomas Midgley, Jr.,
Thomas A. Hochwalt Laboratories,
127 No. Ludlow,
Dayton, Ohio.

My dear Midgley:-

I have your letter of March 1st enclosing report for the month of February. Now, frankly, I do not like your idea of placing this before a good rubber chemist and unless you wish me to do so I would much rather not do so for the following reasons:-

A thing of this kind requires a certain amount of enthusiasm and vision which does not usually exist in an ordinary chemist no matter how experienced he may be. I mean a chemist whose activities are confined to ordinary commercial activities or even consulting work. I think it should be judged by those who are familiar with research work and who recognise that there is nothing sure in these kind of developments but that it must be and will be solved sooner or later, if not one way then another. I would much rather rely upon your judgment and Mr. Kettering's judgment than I would on anyone elses.

I am sure that if I referred the matter to the duPont Company they would say we were on more or less of a hopeless track and would recommend that we discontinue the activity. That would be a perfectly natural reaction - just as when new things in automotive practice come up our engineers are very apt to take a negative, or at the best, not a very enthusiastic attitude toward same.

The amount of money that we are spending in this endeavor is not great considering our resources and the operations of our business. I feel that we are bound to learn something anyway even if we do not solve the problem and as long as you and Mr. Kettering feel that we are making progress, I am perfectly willing to continue the activity for a reasonable time anyway in order that we may exhaust those ideas which you have in mind.

For all the above reasons, therefore, I would rather ride along exactly as is and have no desire to raise the question unless you wish me to do so.

Very truly yours,

APSJr./K

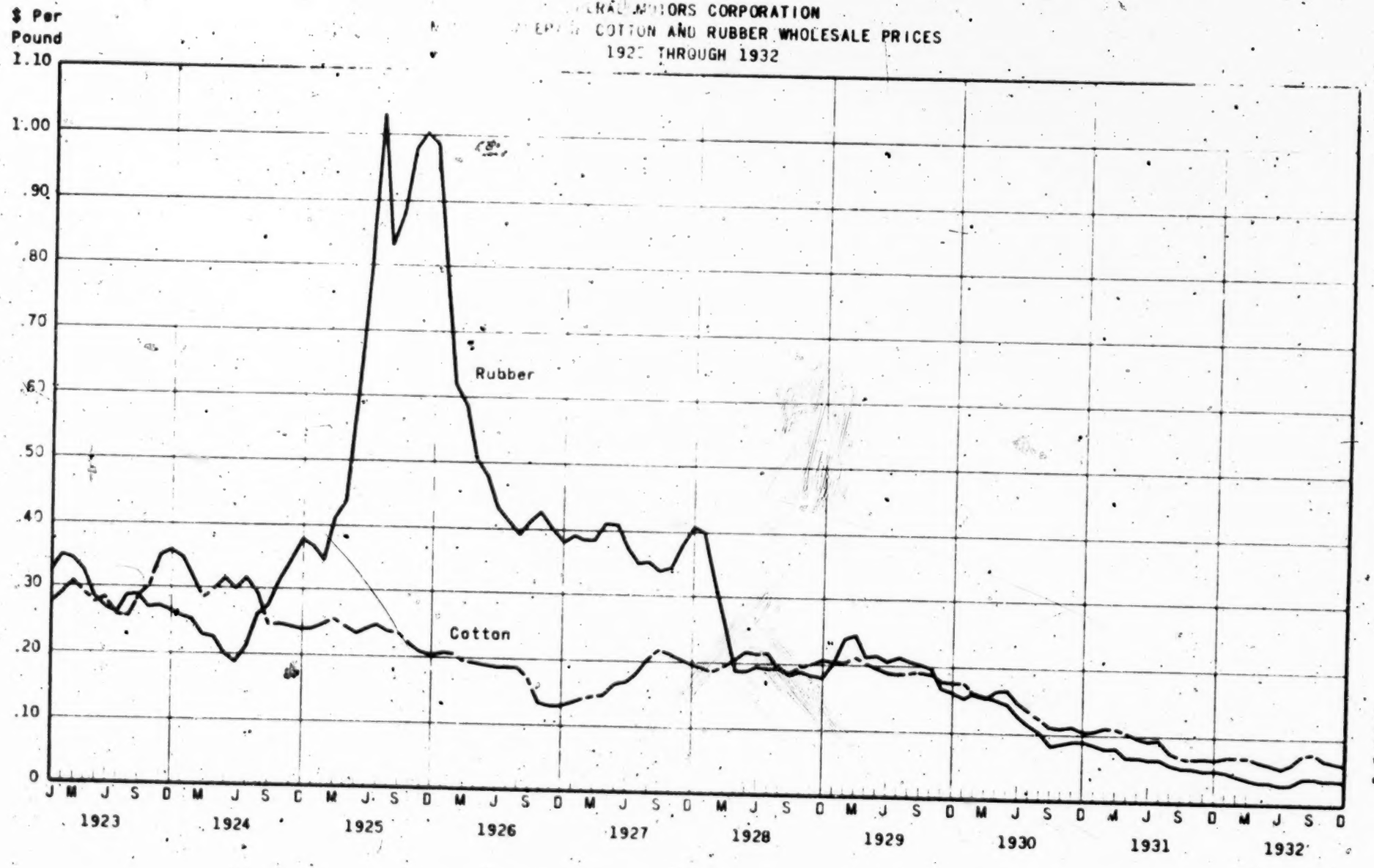
c/c Mr. C.F.Kettering

NOTE: Routing stamp has checks after A. P. S. and A. T. B.

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Defendant's Exhibit (GM) No. 133



COTTON AND RUBBER WHOLESALE PRICES
1923 THROUGH 1932

Source: U. S Dept of Commerce, Annual Supplement 1932 Survey of Current Business

4769

4765

Defendant's Exhibit (GM) No. 134

I

Letterhead of
GENERAL MOTORS CORPORATION
Detroit, Michigan

April 27, 1928.

Mr. Alfred P. Sloan Jr.,
General Motors Corporation,
New York.

My dear Mr. Sloan:

I am enclosing you copy of a letter which I wrote to Mr. Midgley today, respecting the further operations of the Thomas and Hockwalt Laboratories, which I trust will meet with your approval.

Very truly yours,

James McEvoy, Director,
PATENT SECTION,
General Technical Committee.

JMcE-McD

NOTE: Stamp in upper right corner read "Received APR 30 1928 A. P. Sloan, Jr."

April 27, 1928.

Mr. Thomas Midgley Jr.,
Thomas and Hochwalt Laboratories,
127 North Ludlow
Dayton, Ohio.

Dear Sir:

Referring to the experimental work relating to synthetic and natural rubber carried on by you for General Motors

4746

Corporation at Dayton since January 1926 under the name of Thomas and Hochwalt Laboratories, I would say that I understand that all such work, so far as the Corporation is concerned, will terminate as of April 30, 1928, and after that date it will not be liable for any further expense of any kind in connection therewith.

It will be agreeable to the Corporation, however, that the said Laboratories be continued by you, Mr. Thomas and Mr. Hochwalt in such manner as you and they may determine, and that all of the equipment thereof, and for which the Corporation has paid, shall revert to you without any cost, provided you and the above mentioned gentlemen continue certain experiments or studies, relating to natural rubber which have not as yet been finished are completed, and when such experiments are completed, said equipment shall then become your absolute property.

During the whole period that the aforesaid experiments relating to natural rubber are being carried on the Patent Section of the Corporation is to be kept fully advised thereof and should it deem that any application or applications for patent should be filed for any matter or thing connected therewith, you or the inventor thereof shall promptly sign such application or applications, together with an assignment thereof, to the Corporation, and at all times render such assistance and sign all such papers as may be required by the Patent Section in connection with the prosecution of said application or applications and it is, of course, to be understood that all such inventions are to be the sole and absolute property of the Corporation without any payment therefor being made by it to either you or any other person.

3737

Mr. Thomas Midgley (2)
April 27, 1928.

After the aforesaid application or applications are filed you shall be permitted to publish the results of any such experiments provided the Patent Section of the Corporation does not feel that it would jeopardize or prejudice the patent situation relating thereto.

If the above is in accordance with your understanding, kindly so signify at the bottom of this page, by signing the acceptance appended thereto and such acceptance, together with this communication shall be taken and considered by yourself, and Messrs. Thomas and Hochwalt, whom I would also ask to sign said acceptance, as constituting an agreement between you, them and the Corporation to the same effect as if the matters and facts herein set forth had been embodied in the form of a formal agreement under the hands and seals of yourself, Messrs. Thomas and Hochwalt and the Corporation.

Yours very truly,

General Motors Corporation

By .....

We hereby accept the above and agree to abide by and be bound by all of the terms and provisions thereof.

.....(SEAL)

.....(SEAL)

.....(SEAL)

Defendant's Exhibit (GM) No. 135

THOMAS AND HOCHWALT LABORATORIES
CHEMICAL RESEARCH
127 NORTH LUDLOW
DAYTON, OHIO

6951

April 5, 1928.

Mr. A. P. Sloan, Jr.,
General Motors Corporation,
Broadway at 57th,
New York City, New York.

Dear Mr. Sloan:

With your permission I will forego a progress report on last months activities as the only thing resulting from the work was some data on tensile strength with age in relation to amino acids. This data is not yet complete and when completed will terminate the budget expenditures. I shall give you the complete report of all this data at that time.

I want to thank you very much for your decisions of last week with regard to permiting me to continue the theoretical investigation, and I furthermore want to assure you of my whole hearted desire to stay with the bunch and am entirely at the disposal of General Motors Corporation whenever you need me. I might say that I am anxiously awaiting directions.

Very truly yours,

Thomas Midgley, Jr.

Thomas Midgley, Jr.

TM-Jr-D

NOTE: Stamp reads "Received Apr. 7, 1928 A. P. Sloan, Jr."

4749

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Defendant's Exhibit (GM) No. 136

69152

GENERAL MOTORS CORPORATION

INTER-ORGANIZATION LETTERS ONLY

August 30, 1928

O Mr. J. L. Pratt
Vice President - General Motors Corporation — ADDRESS — New York

ROM James McEvoy — ADDRESS

UBJECT

My dear Mr. Pratt:

The attached is a quotation from the Science News-Letter of August 18th being a report of the proceedings of the Institute of Chemistry of the American Chemistry Society at a meeting held at Evanston, Illinois and which I thought might be of interest to you.

Very truly yours

James McEvoy
Director Patent Section
General Technical Committee

4750

"The quest for synthetic rubber may be compared to the quest for the Golden Fleece, the Fountain of Youth or the Philosopher's Stone, in so far as the objective appears exceedingly unlikely of attainment, but the quest has been very fruitful in secondary results for the general improvement of rubber technology and scientific knowledge."

This was the theme of Thomas Midgley, Jr., of Dayton, Ohio, noted as the inventor of ethyl gas.

Rubber is, chemically speaking, a multiplication of an organic compound known as isoprene, and many attempts, some of them successful on a laboratory scale, have been made to make rubber out of this substance. But none of these isoprene rubbers has the stretch and bounce and other physical qualities needed for full-fledged commercially successful rubber. In the investigation of the differences between the artificial and the natural products, however, chemical discoveries have been made that now have wide application in rubber manufacture and in certain other industries as well.

NOTE: Stamp in upper right corner on page 1 reads "J. L. Pratt Answered—Noted—" This stamp has been checked. Stamp below it reads "Received Sep. 6, 1928 A. P. Sloan, Jr.".

4751

Defendant's Exhibit (GM) No. 137

THOMAS AND HOCHWALT LABORATORIES
CHEMICAL RESEARCH
127 NORTH LUDLOW
DAYTON, OHIO

6954

September 5, 1928.

Mr. A. P. Sloan, Jr.,
General Motors Corporation,
Broadway at 57th,
New York City, New York

Dear Mr. Sloan:

I thought I would write you and more or less informally report on what we have been doing since May 1st. We have prepared five papers for presentation at the Swampscott meeting of the American Chemical Society. The first paper is on the products of the destructive distillation of rubber and cleans up this rather vague subject, once and for all. The second is on a spiral fractionating column which we have developed during the past four months into a very useful piece of laboratory equipment. I have transferred this information to Mr. Boyd at the Research Laboratories where he is making use of it. The other three papers are laboratory notes and of no significance regarding any development.

In addition to the above we have pursued a research for the Frigidaire Company and believe we have a very constructive development to turn over to them. We also have been of some help to the Inland Manufacturing Company in connection with their battery box development, although as a matter of fact, we did very little else than keep them from getting excited about some minor difficulties and placing them in touch with sources of raw materials.

The theoretical investigation of rubber which I elected to pursue, is continually broadening in its aspects and it may be some little time before we have obtained any commercial results, if ever. However, it is work that needs to be done and we are having a good time doing it.

With best personal regards, I am

Very truly yours,

Thomas Midgley, Jr.

Tm-jr-d

NOTE: Stamp reads "Received Sep. 7, 1928 A. P. Sloan, Jr."

Defendant's Exhibit (GM). No. 139

6955

Wilmington, Dela., October 30, 1919

Mr.W.S.Carpenter, Jr., V.P.,
Development Department,
B u i l d i n g.

Dear Sir:

In view of my knowing of no suitable permanent position at this time available in the Company wherein my services can be advantageously utilized, and in view of my having an attractive offer to engage in a financial business in an executive position, this business in no wise being competitive with any of the interests of the DuPont Company or any of its subsidiaries, and in view of my being able to complete or put in shape for ready completion the Costs Accounting Studies in which I am now engaged, I respectfully apply for leave of absence for one year beginning January 1, 1920.

If granted this leave it is my intention to take up my new employment February 1, 1920.

Very truly yours,

JL/D

Defendant's Exhibit (GM) No. 140

6956

CLASS OF SERVICE	SYMBOL
Telegram	
Day Letter	Blue
Night Message	Nite
Night Letter	N L

If none of these three symbols appears after the check (number of words) this is a telegram. Otherwise its character is indicated by the symbol appearing after the check.

WESTERN UNION TELEGRAM

NEWCOMB CARLTON, PRESIDENT GEORGE W. E. ATKINS, FIRST VICE-PRESIDENT

CLASS OF SERVICE	SYMBOL
Telegram	
Day Letter	Blue
Night Message	Nite
Night Letter	N L

If none of these three symbols appears after the check (number of words) this is a telegram. Otherwise its character is indicated by the symbol appearing after the check.

RECEIVED AT 202 WEST THIRD ST., ALTON, ILL.

5 A OC 13

DU WILMINGTON DEL 955A DEC 31 1919

JAMES. LYNAP.

CARE BROKAW EDEN CO ALTONILLS.

ARTIFICIAL SILK SUBJECT PRACTICALLY SETTLED CAN YOU LEAVE FOR WILMINGTON TODAY FOR CONSULTATION

CARPENTER

852AM

4754

E

Defendant's Exhibit (GM) No. 141

6957

Charge to the account of _____ $ _____

CLASS OF SERVICE DESIRED	
Telegram	
Day Letter	
Night Message	
Night Letter	

Patrons should mark an X opposite the class of service desired; OTHERWISE THE MESSAGE WILL BE TRANSMITTED AS A FULL-RATE TELEGRAM

WESTERN UNION TELEGRAM

NEWCOMB CARLTON, PRESIDENT — GEORGE W. E. ATKINS, FIRST VICE-PRESIDENT

Receiver's No.
Check
Time Filed

Send the following message, subject to the terms on back hereof, which are hereby agreed to

- Copy -

Alton, Ill.
Dec. 31st, 11:25 A. M.

W. S. Carpenter, Jr.,
Du Pont Building,
Wilmington, Delaware.

Unable be in Wilmington until Monday wire if satisfactory.

Lynah

E

4755

Defendant's Exhibit (GM) No. 142

6958

New York City,
January 6, 1919.

Confidential.

Mr. J. S. Carpenter, Jr., Vice President,
E. I. du Pont de Nemours & Company,
Wilmington, Delaware.

Dear Sir:

Referring to the conversation in Mr. Yerkes' office on the 5th inst., with Mr. P.S.L.Carpenter, Mr. Yerkes and yourself, relative to my returning to the DuPont Company, to engage in the manufacture of Artificial Silk.

I was much interested to learn of the decision to conduct the silk business as a separate entity under a self-contained management, as I have strongly advocated this policy for the special businesses of the duPont Company, such as Fabrikoid, Pyralin, etc. There is no doubt in my mind that freedom from the burdensome overhead and cumbersome machinery of the parent organization will be immediately reflected in the profits of the business.

In several talks which I had at odd times with Mr. C. A. Patterson and Mr. A. Felix duPont, individually, and with Mr. Spruance and yourself, it was explained to me that the reason why I had not been appointed to any position during the reorganization of the Company last May and June, was because I had been previously selected to handle the Artificial Silk enterprise, regarded as a most important undertaking, for which I was peculiarly qualified. You may recall that in a conference in Mr. Lammot duPont's office, on October 30th, at which you and Mr. Spruance were present, arranged for the purpose of learning Mr. duPont's views upon my application for a two years' leave of absence, Mr. DuPont said he believed that I should have felt complimented in having been selected to handle the Artificial Silk enterprise.

The Executive Committee's resolution appointing Mr. Yerkes "Executive Head" of the silk company, clearly designated him as the one to handle the enterprise. My appointment as "Production Manager" does not sufficiently define my status. When the proposed company is completely organized I may find myself in a distinctly subordinate position. Naturally, I do not understand the reasons why.- I have been in the employ of the company fourteen and one-half years, Mr. Yerkes about two years. What conclusions should one draw?

Having in mind my experiences in the Newburgh enterprise, and considering events of the last six months, I could not at this time return to the employ of the duPont Company and work with that energy and initiative which only the hope and expectation of fair and considerate treatment can stimulate. I have, therefore decided to remain with the Brokaw-Eden Company.

I take occasion to again thank you for the courtesy and consideration with which you have treated me during the time I have been nominally attached to your department.

With kind regards, I am

Yours very truly,

Signed (James Speyer)

4756

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Defendant's Exhibit (GM) No. 143

E. I. DU PONT DE NEMOURS & COMPANY

WILMINGTON, DELAWARE

EXECUTIVE OFFICES

Mr. James Lynah,
Haskell,
New Jersey.

Dear Sir:

I have today received your letter of January 6th and have noted your decision regarding returning to us to take charge of the artificial silk operations.

I have felt consistently that if you could get back into important and constructive work with the Company you would soon return to your old self and that we would mutually profit. It was for this reason that I was very much in hopes you would consent to give it a trial.

I feel I should not close this letter without clearing up a misunderstanding which I feel you have unfortunately fallen into and which I hope did not weigh too heavily in your decision not to return to the Company. I mean your reference to the fact that you were not now given an opportunity to take up this silk work in as important a capacity as you had been lead to believe you would be offered.

In the first place the fact that you were unwilling to remain with the Company and take your chances upon the development of this opportunity seems to me to change considerably the aspect of all arrangements which may have been contemplated prior to that date and would furnish a very excellent

opportunity for the Company with fairness to all concerned to withdraw from any such previous plans it may have made in this respect should it so desire.

I wish to point out, however, that the Company did not take that action. While under no obligations to offer you this opportunity when you left the Company, the Company nevertheless did offer you an opportunity and in a more important capacity than it ever before had contemplated or intimated.

It had always been expected up until a week or so ago that the silk operations would be placed under one of our present manufacturing departments and that you would be in control of those silk operations, but just as in the case of Arlington and Fabrikoid you would be under the vice president and director of that department. In the new arrangement you would be under the executive head or president of that company who in turn would be under the board of directors of that company. It is the intention as explained to you that Mr. Yerkes as executive head of that new company will have responsible to him not only the production department but the sales and treasury as well. I think you will agree with me fully that no thought was entertained of your having direction of sales and treasury as well as production.

I hope this letter will convey to you the impression that in spite of the fact that no obligation of any nature existed on the part of the du Pont Company

that it has, however, gone beyond what might have been expected of it and has offered you a position though you were not with the Company, of even greater responsibility than had been contemplated before you left the Company.

Yours very truly,

VICE PRESIDENT.

WSC:MCM.

Defendant's Exhibit (GM) No. 144

2nd February 1920.

W. S. CARPENTER, JR., VICE PRESIDENT,
E. I. DuPont De Nemours & Company,
Wilmington, Delaware.

Dear sir,

I acknowledge receipt of your letter of January 7th, regarding my decision not to return to the DuPont Company to take charge of the silk operations.

In view of what had previously transpired, and in view of my finding that Mr. Yerkes had been appointed to be the executive head of the Silk Company, when I had been led to believe that I were to have charge of this enterprise, I could not consistently return to the employ of the company. I understand that so long as it was expected that the silk business would be placed under one of the regular operating departments, it could not have been contemplated that I should be given charge of treasury and sales, as well as production; however, when the decision was reached to incorporate a separate company, I do not understand what disqualified me from being selected as the executive head of the business, and I am impelled to ask the following questions, -

Why, if I were favorably considered for the Presidency of the South American enterprise, where, thousands of miles from headquarters, I were to have charge of construction, as well as sales, treasury and production, I could not be made the executive head of a small company, operating near headquarters, engaged in a business for

which I had been previously selected to be in charge of production because of special qualifications? In the former case I would have been far removed from sources of advice, counsel and information; in the latter case, all these would be near at hand.

Am I not justified in feeling that, if after the character of service I have rendered to the DuPont Company for the past fourteen and one-half years, especially at Newburgh, Haskell, and Tullytown, I am not as eligible to be the executive head of the Silk Company, as a man who has been in the employ of the DuPont Company only about two years, and who has no record of achievement with them, I had better seek employment elsewhere? Could you go before a group of employes and convince them that, so far as the company's interests were concerned, the fair thing had been done in making this selection?

Yours very truly,

James Wyeth

Defendant's Exhibit (GM) No. 145

DU PONT

E. I. DU PONT DE NEMOURS & COMPANY

WILMINGTON, DELAWARE

EXECUTIVE OFFICES

Mr. James Lynah
Haskell, New Jersey

Dear Sir:

I wish to acknowledge your letter of February second in response to mine of January seventh.

I have no desire to continue a discussion of the subject matter of your letter but I have no hesitency in giving you replies to the questions which you have brought up, which replies seem to me self-evident.

Your first inquiry as to why if you were considered as a possibility to take charge of our South American enterprise you were not selected as executive Head of the Viscose Company in this country; it is our opinion that the two positions are of quite a different character and can better be filled by men of quite different qualifications.

You next ask if you had not better seek employment elsewhere if after fourteen and a half years service of the character rendered by you with the du Pont Company you should not be selected for such a position as the one under consideration in preference to a man whom you describe as one having no record of achievement with the du Pont Company and a service of but two years. While not questioning the character of your service with the du Pont Company in the positions held

Defendants' Trial Ex. No. _____

nor your term of service, it must be clear to you that a satisfactory record of services in one position does not necessarily qualify one for any other position which might present itself.

Trusting hat I have responded in a satisfactory manner to your inquiries, I remain,

Yours very truly,

VICE PRESIDENT

WSC:M

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Defendant's Exhibit (GM) No. 146 69966

September 5, 1922.

Mr. J. H. Main, Director Purchase Section,
General Motors Corporation,
Detroit, Michigan.

My dear Mr. Main:-

This will introduce to you Mr. James Lynah, the gentleman whom I mentioned to you last week when we were talking about our Purchase Plan.

Very truly yours,

A.P.S.Jr./K VICE PRESIDENT.

4764

TELEPHONE CIRCLE 8330

Defendant's Exhibit (GM) No. 147

L. & M. DISTRIBUTING CORPORATION

INCORPORATED IN NEW YORK STATE

FISK BLDG. 57TH STREET & BROADWAY

NEW YORK CITY

6967

September 8, 1922.

Alfred P. Sloan, Jr., Vice President,
General Motors Corporation,
224 West 57th Street,
New York City.

My dear Mr. Sloan:

As requested by you I called on Mr. Main in Detroit on the 7th instant. I talked over with Mr. Main the various phases of the work of the Purchase Section of the Advisory Staff for which the employment of my services is being considered.

I feel confident that I can prosecute this work successfully and to your entire satisfaction. I will be much obliged if you will advise me of a decision as soon as possible.

Thanking you for the consideration, I am

Very truly yours,

James Layman

JL/T

E

4785

Defendant's Exhibit (GM) No. 148 6968

September 11, 1922.

Mr. James Lynah,
L & M Distributing Corporation,
Fisk Bldg.,
New York, N. Y.

Dear Sir:—

Replying to your letter of September 8th, I thank you for going to Detroit and talking the matter over with Mr. Main. I will take the matter up with him in due course and get his viewpoint.

Very truly yours,

Vice President.

A.P.S.Jr./K

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4756

Defendant's Exhibit (GM) No. 140

GENERAL MOTORS CORPORATION

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Co-ordination of Purchases

o O o

Revised to September 1, 1923.

4787

Defendants' Trial Ex. No.

GENERAL MOTORS CORPORATION

CO-ORDINATION OF PURCHASES

THE OBJECT

The object of the administration is to so co-ordinate the total purchasing power of the Corporation that the most logical and economic condition will result and the benefits of concentrated purchasing be realized without destroying in any real sense the effectiveness or merit of any individual purchasing unit.

Although no complete figures have yet been developed showing concretely what savings can actually be effected through such a co-ordination, it seems very reasonable to believe that in the course of a normal year's operation, an appreciable number of millions of dollars can be realized.

THE BENEFITS

It appears obvious that the benefits of such a plan of co-ordination should be many fold and only a few of the major ones are here enumerated to indicate the tremendous advantages which should accrue to the Corporation through the suitable application of these and many other factors:

1. The bringing together of the Corporation's purchasing talent cannot help but further a greater maturity of judgment and more breadth of intelligent action than could be expected should the several purchasing units act entirely independent of one another.

2. Quantity purchasing results in lower buying prices.

3. By arranging to take a large percentage of the output of a supplier, that supplier can manifestly effect marked economies in his operations, in which economies the Corporation can logically participate. A large volume of assured business to any manufacturer justifies his making the lowest possible selling prices, prices even approaching costs, for the reason that the maintenance of his organisation is certain; and the balance of his business, even though smaller in volume, can readily be made to pay a return on his whole investment without being marketed at excessive prices, for his overhead will be well cared for by such a substantial volume of business as an institution like General Motors is in a position to offer him.

4. The proper co-ordination of purchasing with standardisation will result in a smaller number of items to be purchased and thus in addition to handling benefits economies will automatically accrue through the commercial law of quantities affecting prices.

5. Through standardisation one Division will be able to assist another in an emergency and the Corporation at large will profit through an ability to utilise in other Divisions materials both of a raw and expense character purchased for certain Operations, which Operations, because of changes or contingencies, get into a condition where they are no longer able to utilise their anticipated requirements.

6. Inventories can be kept at a minimum because suppliers furnishing the same things to several Divisions will be able to render prompt service, and this inventory reduction can, in addition, be furthered by the forcing of suppliers, to which a volume of business is being given, to keep store-houses or points of contact adjacent to our Operations with supplies on hand to be taken as needed.

7. In certain instances it will result in better products. For example, it is well known how difficult it is to obtain the proper specifications in certain steels, particularly when dealing with heat treatments. The coordination of purchases should result, for instance, in the high heats being taken by the Divisions requiring them, the lower ones likewise, to the end that the Operations severally profit and a better product ensues.

8. Specifications placed at the most opportune times will result in an ability to take advantage of a better market and a greater appreciation of General Motors purchasing power on the part of large suppliers of raw materials.

THE PROBLEM

This matter of co-ordinating purchases which may seem comparatively simple becomes one of greater complication when the extreme technical character of practically all the Corporation's products is considered and when it is recognized that many personalities and viewpoints developed through years of contact with certain products, as compared with others, must be dealt with. The Corporation uses articles of such a technical character that in order to get suitable co-ordination a general agreement must be reached that any specific article will be essentially satisfactory for all operations and perform its functions as well, if not better, than any of the various products for which it is to be substituted. The problem, therefore, resolves itself into two steps, as follows:

1. Specifications -

   To co-ordinate the various viewpoints into an agreement or specification as to what will satisfactorily serve the purposes of all.

2. Contracts -

   To develop contracts, all the conditions of which prices, terms, deliveries, etc. will be the best that can possibly be obtained.

Specifications - Dealing with "1", it is believed that the co-ordination and agreement as to specifications will present the most difficult part of the problem and that a single item must be taken up for consideration at a time. Aside from the necessary study from the technical standpoint relating to each single item, the psychology of the situation must be dealt with, and this is very important. By this is meant the determination of the actual facts in each case as distinguished from the perfectly natural hesitancy in making any change. This psychology is apt always to exist in dealing with any product or any organization which has given successful service for a long term of years. It will be difficult for the many different personalities in a large organization to recognize in concert that a different article may give equally good, if not better, satisfaction. All such questions, however, can and naturally will be readily overcome if there is underlying the whole plan a suitable recognition of the fundamental advantages accruing to the Corporation by standardization and through the co-ordinated purchase of such materials as can logically be so procured.

Contracts - No great difficulty should arise in this regard. It becomes simply a question of obtaining the best price possible and of developing a plan which accomplishes that result in the most feasible manner. With "1" taken care of, "2" should become more or less a point of routine.

693.1

THE PLAN

The plan contemplates making as few changes in the existing organisation and the introduction of as small an expense as possible in obtaining the desired results. The development of this plan must continue to recognise the fundamental principle that there is a tremendous amount of ability and experience in the Purchasing Departments of the several Divisions and Subsidiaries and that this talent should and must be capitalised to the good of the Corporation as a whole. It follows that if the best efforts of each and every individual purchasing agent can be co-ordinated, great profit will result to the Corporation. The duties of those parts of the organisation affected by the application of this plan are defined as follows:

1. General Purchasing Committee

The responsibility for the co-ordination of General Motors purchases shall lie with a Committee appointed by the President and termed a General Purchasing Committee. The personnel of this Committee will be representative of all the phases of the Corporation's activities concerned in any way with its purchasing situation. In addition to such executive officers and Corporation employes as it will logically include, it will be representative of the Purchase Section of the Advisory Staff and sufficiently of the Purchase Departments of the several Operations. In the selection of this personnel consideration will be given to geographic location and the necessity of contacting with all the different types of purchases in order that the findings of the Committee may be truly representative and carry weight with the Corporation at large. This Committee shall have a Chairman and a Secretary. It shall hold regular meetings at pre-determined monthly intervals.

Relations between this Committee and the Purchase Section of the Advisory Staff shall be those of principal and agent. The Purchase Section will carry out the procedures and policies established by the Committee and will enter into only such contracts as have been formally approved by the Committee. Any position taken by the General Purchasing Committee should be largely final so far as dealing with individual items and procedures are concerned, considering that this Committee is founded on the broad principle set forth in this program. In the event action becomes desirable but is within the province of some other authority, any recommendation of the Committee should and would carry great weight and usually be approved as setting forth the best opinion of the Corporation as a whole. All questions of purchase policy and procedure should be brought before and be determined by the Committee, the members of which are charged with a real Corporation responsibility and should do everything possible to discharge that responsibility as members of the General Motors Corporation. Purchasing Agents of Divisions and Subsidiaries not represented on the Committee should at all times be welcomed at the meetings, and while they would necessarily have

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no vote in determining policies, their viewpoints, suggestions and criticisms should always be considered. It is the duty of everyone in the entire organisation having any purchase viewpoints to express to submit them preferably by appearing at any meeting of the Committee or by writing to it. Communications relative to any action of the Committee, be they in the form of criticisms, suggestions or what-not, should be addressed to the Secretary, who will give them prompt attention.

To sum up the whole plan so far as the General Purchasing Committee is concerned, it is recognised that no Committee can function in an administrative way. Nevertheless, a Committee of this character in a large organisation is essential for the purpose of co-ordination and of capitalising all the ability and experience that lies within that organisation. It is, therefore, believed that this arrangement in the plan will bring to the support of the program the best thought in this particular line that exists throughout the entire Corporation.

It is not intended that the duties of members of this Committee will be so heavy as to constitute a sufficient draft on their time and energies to handicap in any way their routine work in their regular positions with the Corporation.

2. Standing Sub-Committee

In order to expedite the duties of the General Purchasing Committee to the extent of its being better able to cover all of the work appearing on programs of its meetings and to enable it to devote more time for general considerations, a Standing Sub-Committee shall be maintained, whose Secretary shall be the Secretary of the General Purchasing Committee. This Sub-Committee will normally meet prior to the meetings of the General Purchasing Committee. This Sub-Committee shall have power to act to the extent of authority of the General Purchasing Committee and the transactions of its meetings will be regularly reported in minute form for the approval of the General Purchasing Committee.

3. Purchase Section, Advisory Staff

The relations of the Purchase Section, Advisory Staff, to the General Purchasing Committee are, as before stated, that of principal and agent. The Purchase Section is the administrative agent of the General Purchasing Committee. It is one of the duties of the Purchase Section to develop a list of articles in which co-ordination would seem possible and profitable. The responsibility for this initiative is lodged definitely with the Purchase Section, but this does not relieve the members of the General Purchasing Committee from bringing up any matters which would seem to result in the increased effectiveness of the plan as a whole. The General Purchasing Committee has no power of administration. It must look

to the Purchase Section for that function. It will also be the duty of the Purchase Section to maintain the necessary contact, both personally and otherwise, with the Purchasing Departments of each Division and Subsidiary in order to develop the necessary data upon which recommendations to the General Purchasing Committee will be based. It will be the further responsibility of the Purchase Section to secure the necessary co-ordination from other Staff Sections and bodies. In other words, the Purchase Section, through its Director and organization, will act as an administrative agent carrying out the policies and rulings of the General Purchasing Committee which cannot, as before outlined, function in an administrative way.

4. Other Advisory Staff Sections

It will be the duty of other Sections of the Advisory Staff to cooperate with the Purchase Section in the development of the necessary specifications as before outlined to the end that the viewpoints of the different Operations will be properly co-ordinated into one set of specifications that will be acceptable for all. All such specifications will be passed upon by the General Purchasing Committee. It will, for instance, be the duty of the Factory Section when called upon by the General Purchasing Committee, or through its agent the Director of the Purchase Section, to contact with the Divisions to the end that an agreement is effected as to what constitutes proper specifications for a given article so that a definite concrete proposition upon which a contract can be properly based and submitted to the General Purchasing Committee for action can be developed.

One of the most important duties of other Advisory Staff Sections and of the Financial Staff will be to determine that the proposed source of supply is a proper one, both from the standpoint of financial facilities as well as the personnel, to properly assume any obligation that the General Purchasing Committee may feel warranted in recommending being placed with such a supplier. This will particularly apply where a considerable proportion of the Corporation's needs may be, for the sake of reasons set forth in this Procedure, concentrated with one source of supply or with a limited number of such sources.

5. General Executive Officers

With the responsibility for the whole program lodged with the General Purchasing Committee, a body representing all phases of the Corporation's Operations, as well as its general administrative side, it is thoroughly believed that all Operations recognising as they must the tremendous advantages accruing to the Corporation will, in all cases, accept the decisions of this Committee.

METHOD OF PROCEDURE

The method of procedure in carrying out this program will be substantially as follows:

1. Suggesting Items for Co-ordination

The Director of the Purchase Section or any member of the General Purchasing Committee or any member of the organisation attending any meetings of this Committee can suggest any article such, for example, as leather belting, as a desirable one to be co-ordinated and contracted for in quantity in the belief that a better price and other advantages would flow from such a co-ordination. If any action in the matter is taken it must be by the General Purchasing Committee, which Committee will decide as to the proportion of the total requirements of the Corporation which shall be covered by contract, together with the duration of the contract. The Committee may decide perhaps that the moment is not opportune to deal with a given article. It may, on the other hand, feel that a general contract can be negotiated without further formality. Again, it may direct that, on account of a possible difference of opinion among the Operations as to what constitutes leather belting, some other Section of the Advisory Staff or some body should develop a proper specification.

2. Establishment of Standards and Development of Specifications

If detailed specifications are essential, some Section of the Advisory Staff, or perhaps the Works Engineers Committee, or a Sub-Committee, to which this study will be referred by the Committee, will take the matter up and will contact with the proper Department in each Operation in order to develop specifications or standards which they in turn will submit to the General Purchasing Committee for action and approval. If approved by the Committee, its Secretary will send copies of the specifications to the Purchasing Agent of each Division interested, with the request that he approve, constructively criticise, or suggestion modifications to suit his requirements. A final report on this referendum will be submitted to the Committee so that approved standards may be authorised for insertion in the Corporation's book of Engineering Standards and for use in developing general contract proposals.

3. Questionnaires

Covering items which have been approved by the Committee, its Secretary will send out questionnaires to all Purchasing Agents of the Corporation on the approved form. Information on returned questionnaires will be tabulated by the Secretary and turned over to the Director of the Purchase Section.

See "Exhibit A" for form of Questionnaire.

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4. Advance Notice of Commitments

The Secretary of the General Purchasing Committee will send letters out to the Operations covering items on which the summarized questionnaires warrant development of general contract proposals and on which bids are about to be requested. These letters will severally advise the Divisions and Subsidiaries -

a. the quantities for which they will be committed,

b. the period of commitment,

c. the sources which are being requested to bid, and

d. the specifications under which bids are being requested,

and they will inquire of the Operations -

a. what preference, if any, they have for any of the sources named, and

b. the names of additional sources.

See "Exhibit B" for typical letter on Advance Notice of Commitments.

5. General Contract Proposals

From the information on the returned questionnaires the Director of the Purchase Section will develop general contract proposals submitting them on the standard form to the General Purchasing Committee for final decision. Each member of the Committee will be furnished with a copy of summarized proposals.

6. Disapproval of Contract Proposals

In the event the Committee disapproves of contract proposals, the Secretary of the Committee will notify all Purchasing Agents of the Corporation interested that a general contract will not be made and will submit with this notice the quotations received from the various sources, as a matter of information.

7. Participation in Contracts

When a general contract has been concluded, the Purchase Section will notify all Purchasing Agents of the Corporation to that effect and give each one a brief showing full information as to terms, etc. and the extent that his Operation is expected to participate in same. Any requested number of copies of these briefs - which will be serially numbered - will be furnished. Should it be considered of advantage for any of the various branches of an

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Operation to receive copies of these briefs, this distribution will be made through the Operations Purchasing Agent and it will be his function to see that they are suitably distributed.

See "Exhibit C" for brief of General Contract form.

In this regard the following points are to be carefully observed:

a. No Operation is permitted to disclose prices on which general contracts are based, nor any special terms or conditions incident to said contracts, to any source whatsoever outside said Operation.

b. No Operation is permitted to negotiate with any supplier or place any orders whatsoever with any other suppliers than mentioned in the general contract, nor on any different terms than those stipulated. The contract conditions must be absolutely adhered to by those Operations mentioned as participating in said general contract.

c. In the event it comes to the attention of any Operations that better prices or more advantageous conditions of any kind or character are obtainable, it is the duty of that Operation to notify the Secretary of the Committee accordingly.

8. Re-development of Contracts

In the absence of any specific instructions to the contrary, the Director of the Purchase Section will, approximately sixty days prior to the expiration of any general contract, resubmit the items on such expiring contract to the Committee for approval, regarding the re-development of it.

9. Contracts Covering Part Requirements of Corporation

The General Purchasing Committee, having decided in favor of a contract, may find it advisable at times to delegate a Sub-Committee or a Divisional Purchasing Agent to enter into such contract covering such part of the requirements of the Corporation, or of such Divisions or Subsidiaries, as the Committee may elect. Upon completion of the contract, however, if handled by others than the Director of the Purchase Section, full information concerning it shall be turned over to the Purchase Section for distribution to the interested parties.

10. Operations' Use of General Contracts

All Operations will use such contracts to the extent of their respective commitments, will place orders against same and will liquidate the indebtedness caused by these purchases on their

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own account in the usual manner. This will make absolutely no difference in the functioning of the Purchasing Departments of any Operation except that the initial placing of the contract, through the necessity of co-ordination, is removed from their province and becomes the sole duty and responsibility of the General Purchasing Committee.

11. Contract Rebates

In the case of contracts calling for rebates for the purpose of protecting prices, or for any other purpose, such rebates will be handled by the Purchase Section, Advisory Staff, so far as records are concerned. All such rebates will be credited through the General Office of the Corporation to the Operations entitled to them, at the end of each month - not specifically, but as a general sum. This means that each Operation will get the benefit of the Corporation's price and further that the initial billing will be the lowest possible price that any Operation individually is able to obtain. This procedure is considered desirable because to get the benefit of the lowest possible price, objections are sometimes made on part of suppliers in disclosing that price. While this method will to a certain extent develop an incorrect cost of sales, the errors will be very small and it is preferable to deal in this manner than with each individual item separately. In the event the price made to the Corporation on any special contract is no lower than the price accorded any Operation, then the Purchase Section, Advisory Staff, will have no duty to perform after having effected the contract.

12. Obligating the Corporation

Provided it is necessary, in order to secure the lowest possible price, or any other favorable terms, to obligate the Corporation to take a specific amount of material from any supplier, such contract can only be entered into upon the recommendation of the General Purchasing Committee and with the approval of the Finance Committee consistent with regulations adopted by that Committee. In the event, however, such contracts call for an obligation limited by a certain percentage of the Corporation's purchases, without involving quantity, action on the part of the General Purchasing Committee will be all that is required to authorise the Director of the Purchase Section to effect such a contract.

13. Ability of Sources of Supply to Assume Obligations

One of the most important considerations that not only the General Purchasing Committee and the Purchase Section, Advisory Staff, but other Staff Sections cooperating with same, must determine, is the ability of a source of supply to assume an obligation that may be placed with it, having in mind the ability of that source to comply with delivery requirements. It is mani-

festly essential, in order to capitalise to the fullest possible extent the Corporation's purchasing power as outlined in this Procedure, that buying should be centralised in a limited number of places and in as large units as possible. Conversely, it must be recognised that in capitalising the purchasing power in this manner a liability is created to the degree that the supplier assuming the obligation may not be able to comply with it. In such a contingency, the Corporation might be placed in a position where it would be obliged to go on the open market and purchase large quantities of material, perhaps at a time when the market had considerably advanced, and be penalised to that degree. Yet, even more important, it might have difficulty in obtaining the necessary supplies on short notice because suppliers might be well filled up with specifications with other manufacturers, and in this manner the Corporation's entire manufacturing program might be jeopardised with a loss many times greater than the savings the co-ordination might possibly effect. It is manifestly impossible to lay down any fixed rule, for the liability thus created could only be determined in each individual case and would constitute a summation of many factors such, for example, as the nature of the material, the number of sources of supply available, etc.

This constitutes a phase of the program which should be very carefully considered by the General Purchasing Committee, as well as by the Purchase Section and by other Advisory Staff Sections, since it is from standpoints more important than the contract price that the greatest care should be exercised. The General Purchasing Committee should recognise the experience of each and every Operation, for many of them have had contact extending over a term of years with certain suppliers, to the end that the Corporation's interest is protected to the fullest possible extent.

14. Circular Letters

In order to keep the Operations informed in summarised fashion of the work of the Committee, its Secretary, subsequent to each regular meeting, will address to them circular letters noting under suitable captions the disposition of all items presented for consideration at the meeting. It is naturally to be appreciated that the information contained in these circular letters is of a decidedly confidential nature.

15. Correspondence

All correspondence between the General Purchasing Committee, the Purchase Section, Advisory Staff, and the Divisions and Subsidiaries shall be conducted with the Purchasing Agents of such Divisions and Subsidiaries.

EXHIBIT A

GENERAL MOTORS CORPORATION
GENERAL PURCHASING COMMITTEE
QUESTIONNAIRE

EXHIBIT A
TO PURCHASING AGENTS:

DATE _____

PLEASE FORWARD PROMPTLY THE INFORMATION REQUESTED BELOW.
RETAIN DUPLICATE COPY OF QUESTIONNAIRE FOR YOUR FILES.

JAMES LYNAH, SECRETARY

ITEM _____

REQUIREMENTS FOR PERIOD _____ 192__ TO _____ 192__

QUANTITY _____

TOTAL ANNUAL COST OF PURCHASES _____

DETAIL SPECIFICATIONS (SPECIFICATIONS WHICH YOU USE WHEN SENDING OUT INQUIRIES)

PRESENT PRICES _____ TERMS _____

F. O. B. _____

ARE YOU UNDER CONTRACT AT PRESENT? IF YES, GIVE:

SOURCE _____

PERIOD _____ QUANTITY _____

DATE OF EXPIRATION _____

IS THERE ANY REASON WHY YOU SHOULD NOT PARTICIPATE IN A GENERAL CONTRACT? IF SO, WHY?

IS THERE ANYTHING SPECIAL ABOUT YOUR REQUIREMENTS? IF SO, GIVE FULL PARTICULARS

RECOMMENDED SOURCES OF SUPPLY _____

_____

_____ DIVISION

DATE _____

_____ PURCHASING AGENT

USE REVERSE SIDE FOR ADDITIONAL SPECIFICATIONS.

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E X H I B I T B

E X H I B I T B

(Date)

Subject (As is)

Attention of (Purchasing Agents Concerned)

The Committee has authorized development of general contract proposals on (as is), and has ordered the sending out of requests for proposals covering your requirements for period (month, date, year to and from) inclusive which are estimated as follows:

Names of Divisions	Estimated Requirements
- - - - - - - - -	- - - - - - - - -
- - - - - - - - -	- - - - - - - - -
- - - - - - - - -	- - - - - - - - -

Requests for bids are being sent to:

Names of Sources
- - - - - - - - - - - - - - -
- - - - - - - - - - - - - - -

Please suggest any additional sources you desire and give preference, if any, for sources listed.

Sources are being requested to bid on the following specifications

- - - - - - - - - - - - - - - - - -

Please advise if these specifications are satisfactory and fully cover the matter and if not give any additional specifications.

Very truly yours,

S e c r e t a r y.

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EXHIBIT C

GENERAL MOTORS CORPORATION

GENERAL PURCHASING COMMITTEE

DETROIT MICHIGAN

CONTRACT WITH

CONTRACT BRIEF NO

DATE

TO PURCHASING AGENTS:

HEREIN ARE SET FORTH BRIEFLY THE CONDITIONS AND TERMS ON WHICH YOUR COMMITTEE HAS COVERED YOUR REQUIREMENTS OF THE ITEM LISTED BELOW

FROM 192 TO 192

YOUR PARTICIPATION IN THIS CONTRACT IS REQUIRED UNLESS SPECIFICALLY EXCEPTED BY THE GENERAL PURCHASING COMMITTEE

JAMES LYNAH SECRETARY

ITEM

DETACH AND RETURN

GENERAL MOTORS CORPORATION
DETROIT MICHIGAN

DATE

ATTENTION—JAMES LYNAH SECRETARY

DEPARTMENT—GENERAL PURCHASING COMMITTEE

ACKNOWLEDGING CONTRACT BRIEF

DIVISION

NUMBER DATE

DEPARTMENT

ITEM

BY

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Defendant's Exhibit (GM) No. 150

6985

EXCERPT FROM MINUTES OF

GENERAL PURCHASING COMMITTEE

August 2, 1923

"2. Policies and Procedure.

(a) Standing sub-committee.
In order to expedite the work of the committee to the extent of covering all of the work appearing on the program and devote time for more consideration of many items, a standing sub-committee consisting of Messrs: Allen, chairman, Hulgrave, Main, O'Keefe, Lynah, secretary, was appointed with power to act. The transaction of this sub-committee which will normally meet prior to the regular monthly meeting of the committee will be reported in minute form at the meeting of the committee, for approval.

(b) Additions in personnel to committee.
In the best interests of the work of the committee the chairman was authorized to appoint as permanent members Messrs: Lejuste of Olds and Miller of Oakland. Mr. Pratt expressed the desire of Mr. Kimball to withdraw as a permanent member and agreed to appoint in his place a rotating member from the Accessory group so that each of the purchasing agents in this group will in turn have an opportunity to attend meetings. It was further agreed that it is desirable to have a rotating member from the Inter-Parts Company group."

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E

Defendant's Exhibit (GM) No. 151

6986

GENERAL MOTORS CORPORATION

DETROIT, MICHIGAN

GENERAL PURCHASING COMMITTEE.

February
Sixth
1923.

Alfred P. Sloan, Jr., Esq.,
Chairman-General Purchasing Committee,
New York City.

Dear Mr. Sloan,

In analysing General Motors annual expenditures for purchases, there have been taken from a list of important items, 32 on which complete information from car and truck divisions has been developed.

This indicates that in 1922, there was spent for purchases outside the Corporation, $138,967,317.00 for these 32 items. Copy of this list is attached.

Some of these items are covered by general contract. Others may at once be considered as general contract possibilities. Consideration might reasonably be given to manufacturing some of them within the Corporation.

In order to expedite the disposal of this list, as well as other important items which will be presented for consideration at the meeting tomorrow, I have, with Mr. Main's approval, invited the purchasing agents of Oakland, Olds and General Motors Truck to attend the meeting to participate in discussion. I trust this is agreeable to you.

Items for presentation to the Committee are now being rapidly developed. Knowing your desire to press this work, it appears that more frequent meetings will be necessary.

Full program for some time is assured.

Very truly yours,

James Lyons

Secretary.

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SOME IMPORTANT ITEMS PURCHASED "OUTSIDE" IN 1922 BY CAR AND TRUCK DIVISIONS.

MEMORANDUM FOR GENERAL PURCHASING COMMITTEE - FEBRUARY 7, 1923.

	OAKLAND	CADILLAC	CHEVROLET	G.M.TRUCK	BUICK	OLDS	G.M.CANADA	TOTAL
Batteries	169,785	315,743	1,685,994	62,799	862,828	270,000	332,145	3,639,294
Bodies-Closed	2,518,425	13,547,547	14,157,957	84,447	20,732,530	900,000	2,080,434	53,981,340
" Open	None	mf.	4,380,196	None	2,684,640	930,000	391,870	8,406,706
Bow Sockets	37,750	152,783	358,469	None	229,493	51,554	88,212	918,261
Bows-Wood	21,888	13,836	185,453	None	144,437	17,066		322,680
Carburetors	164,750	mf.	501,223	73,585	712,812	20,985	116,955	1,592,310
Casting-Al.	84,451	121,517	None	None	None	181,228	20,588	407,784
Castings-Die	10,163	82,195	200,000	9,592	115,921	8,600	337	426,808
Casting-Grey Ir.	122,530	mf.	2,553,988	14,000	385,000	no fig.	no fig.	3,075,518
Castings-Mal.	94,043	365,400	1,842,500	202,500	1,990,000	no fig.	no fig	4,494,443
Fenders	397,617	342,844	1,633,453	71,049	None	Make own	156,866	—2,601,829
Forgings	95,000	1,255,789	1,765,146	3,062	None	28,548	89,171	3,236,716
Frames	330,000	336,048	810,456	139,874	1,597,805	475,000	356,914	4,066,097
Gas. Tanks	28,450	mfg.	421,583	23,447		Make own	108,826	582,306
Jacks	8,820	45,412	97,644	8,972	104,250	15,287	28,100	308,485
Lamps	80,375	343,463	512,607	89,764	619,654	91,867	137,216	1,814,966
Leather	137,222	289,620	118,033	None	1,437,724	340,000	150,532	2,473,131
Leather-In.	80,000	72,657	696,250	None	361,150	33,180	no fig	1,243,237
Speedometers	103,950	391,667	1,246,772	150	954,181	112,000	282,938	3,091,678
Springs-Chassis	97,906	415,247	1,025,039	63,957	1,389,173	146,916	337,750	3,477,990
Springs-Cushion	39,293	59,471	345,257	2,798	654,734	80,618	78,106	1,260,277
Springs-Back	85,469	47,312	174,979	None		38,650	58,033	344,445
Steering Wheels	61,530	108,107	309,851	7,061	268,258	75,600	42,000	872,407
Tires	1,006,000	1,860,898	5,949,686	590,382	7,250,970	1,259,000	1,794,166	19,712,502
Tool Kits	18,060	14,923	127,188	14,154	169,339	67,322	37,572	448,552
Top Fabrics	200,000	94,960	800,000	None	995,000	176,968	no fig.	2,266,928
Univ.Joints	159,900	410,906	411,473	106,435	None	own makes	inside	1,088,714
Valves-Motor	68,000	359,517	229,190	None	597,195	38,843	None	1,292,745
Vacuum System	63,000	None	343,289	2,770	478,090	88,680	150,753	1,126,582
Wheels	391,850	763,585	3,060,833	251,810	847,438	533,843	759,230	6,607,989
Windshield	141,470	191,247	1,060,568	None	612,288	219,819	242,119	2,467,511
Paints-Color	87,840	31,134	308,787	17,394	565,101	157,820	155,200	1,317,086
TOTAL	6,847,337	22,033,268	47,157,798	1,744,002	46,780,013	6,378,884	7,996,035	138,967,317

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Defendant's Exhibit (GM) No. 152

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EXCERPTS
GENERAL PURCHASING COMMITTEE
RE
IMPORTANCE OF STANDARDIZATION, POLICIES AND PROCEDURES

Plan for Co-ordination of General Motors Purchases, Corrected to December 1, 1922, page 2.

The Problem Presented.

The question of co-ordinating purchases may seem to be comparatively simple, but when one considers the extremely technical character of practically all the Corporation's products and recognizes that we are dealing with many personalities and viewpoints developed through years of contact with certain products as compared with others, the problem naturally becomes one of greater complication. There are articles that the Corporation uses that are of such a technical character that in order to get proper co-ordination a general agreement is essential that any specific article will be satisfactory for all and perform its functions as well, if not better than any of the various products for which it is to be substituted. The problem, therefore, might be divided into two steps:-

(a) To co-ordinate the different viewpoints into an agreement or specification as to what will satisfactorily answer the purposes of all,

and

(b) To develop a contract, all the conditions of which, price, terms, deliveries, etc. will be the best that can possibly be obtained.

Dealing with "a" it is believed that the co-ordination and agreement as to the specification will present the hardest part of the problem and must be taken up and can only be taken up one item at a time and each thrashed out individually. Naturally, some items will require more consideration than others; some hardly any at all.

Aside from the necessary consideration from the technical standpoint of each of these items, there comes the very important consideration of what might be called the psychology of the situation. I mean by this, the determination of the actual facts in each case as distinguished from the perfectly natural hesitancy of making any change which always exists in dealing with any product and organization which has given successful service for a long term of years. It is difficult, dealing with many different personalities in a large organization, to recognize that

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a different article may give equally good, if not better, satisfaction. There is no question, however, but what all these and many other points that need not be mentioned, can and will be readily overcome if there is underlying the whole plan a recognition of the fundamental advantages accruing to the Corporation by standardization and the co-ordinated purchase of such materials as can properly be co-ordinated.

Memoranda for General Purchasing Committee Meeting, August 2, 1923, page 1.

Policy and Procedure.

1. The Establishment of Standards and Development of Specifications.

If, in order to purchase to the best advantage it is necessary to have set up definite and comprehensive specifications which contemplate limiting any line of supplies or equipment to a minimum so as to reduce the variety carried in inventory, it seems desirable to adopt a procedure to guide the Factory Section, Subcommittees of the Committee, and any other agency to whom investigations for the Committee might be assigned, in their studies of the various items so that they might have clearly in mind what is wanted.

The best way to establish standards and develop specifications would appear to be by the co-ordination of the viewpoints of those who specify what is to be bought and whose duties include the use, operation, maintenance, and repair of same. This procedure is not always desirable, however, on account of the time and expense involved and because many items are susceptible of being covered by definite specifications and comprehensive description so that both suppliers and purchasers know just what is wanted. This refers especially to items of supplies.

In the matter of equipment items a co-ordination of viewpoints in the development of standards and specifications is desirable and necessary. It should be borne in mind that wherever possible at least three competitive sources of supply on all equipment items should be available. In other words, in establishing a standard there should be at least two other choices. It is recognized that in the case of equipment and special supplies this may not always be possible.

In setting up specifications the following procedure is suggested: That the agency to whom the study of development of specifications is assigned submit the proposed

standard specifications to the Committee who, upon its approval, will order that the Secretary send copies of the Specifications to the Purchasing Agent of each Division interested, with the request that he approve, constructively criticise, or suggest modifications to suit their requirements. A final report on the referendum to Divisions to be submitted to the Committee so that approved standards may be authorized for use in developing General Contract Proposals.

General Purchasing Committee Minutes, August 2, 1923, page 1.

Policies and Procedure

(c) The establishment of standards and development of specifications. In connection with studies of items referred by the committee to sub-committees or other agencies for study the following procedure was adopted: That the agency to whom the study of development of standards or specifications is assigned submit the proposed standard and specifications to the Committee who, upon its approval, will order that the secretary send copies of the specifications to the purchasing agent of each division interested, with the request that he approve, constructively criticise, or suggest modifications to suit his requirements. A final report on the referendum to divisions to be submitted to the committee so that approved standards may be authorized for use in developing general contract proposals.

General Purchasing Committee Minutes, August 2, 1923, page 2.

Policies and Procedure.

(i) Works Engineers Committee.

Mr. Sloan outlined the functions of a proposed Works Engineers Committee as related to work of General Purchasing Committee in the establishment of specifications and standards on many items. The committee gave its full endorsement to the appointment of such a committee.

General Purchasing Committee Minutes, April 18, 1924, page 4.

Miscellaneous Matters.

Time was taken here to discuss existing methods of conducting certain studies. It was brought out that in studies leading to the development of specifications such as in the case of thread, carbonizing boxes and pots, abrasive papers and cloth,

loading blocks and decks, etc., and the selection of types of apparatus and equipment such as oxy-acetylene equipment, paint spraying equipment, etc. it was considered more economical to select from the groups of suppliers in the several lines, experienced men who could visit the Divisions with a representative of the Factory Section, observe the use to which materials and equipment were being put; make whatever demonstrations might be desired, to the end that suitable specifications or standards of equipment which would give the results sought in the most economical way might be recommended. Upon the setting up of these tentative specifications or standards the procedure is to supply copies of same to all suppliers in the respective fields for constructive criticism and approval as to commercial adaptation to the end that the field of competitive supply might be as broad as possible.

The procedure dealing with the approval of specifications has been carefully laid down by the Committee. The introduction of suppliers' representatives into the plants with the constant danger of the effort on the part of such representatives to capitalize the product of their principals; the convincing the department heads of the suitability of material different from that which they have been using (should the source of supply be different); the satisfying of other suppliers that their competitor is not being unduly favored, etc., have objections which are understood and appreciated. However we can not justify the expense of maintaining on our staffs experts in the many different lines for the conduct of such studies which would generally last for a short period. There is no doubt of the value of new suggestions and points of view brought to our Divisions by such experienced men. It is more economical generally to have not more than one such man in any particular field visit the works. However there is no objection to as many as the situation may require.

There being no more practical and economical way for the conduct of these studies suggested, it was agreed that the Purchasing Agents would in all cases be the point of contact in the conduct of such studies, and that the Purchasing Agents would co-operate fully in having the Factory Section representatives and the suppliers' representatives introduced to the proper department of the Division where the study is to be conducted, and assist in every way in the efficient conduct of the study. It was agreed that hereafter when studies are to be undertaken the method of conduct of the study will be first submitted to the Committee for approval before the study is begun, so that the Purchasing Agents may be fully informed.

Standing Sub-Committee Minutes, April 1, 1925, page 2.

General Matters.

(a) Distribution of Standards Books.

Procedure covering the distribution of standards books and sections of standards books was approved. This will be covered in a special letter to Purchasing Agents.

Standing Sub-Committee Minutes, June 11, 1929, page 2.

General Matters.

(g) Change in Procedure Relating to Specifications Approved by Divisions for Insertion in Standards Book.

The procedure has been to record with Standing Sub-Committee vote of divisions on Specifications submitted for approval, and to request authority for insertion in Standards Book. In the future, specifications after approval by majority of divisions will automatically be published, and it will only be necessary to record in the minutes that such action has taken place. In the case of disapproval it is understood an attempt will always be made to reconcile any specification to meet this condition if possible.

Defendant's Exhibit (GM) No. 153

6993

EXCERPTS
GENERAL PURCHASING COMMITTEE
Re
ILLUSTRATIONS OF STANDARDIZATION

General Purchasing Committee Minutes, April 17, 1923, page 1.
Unfinished Business.
(d) Report on Thread.
Secretary reported that comprehensive report, suggesting sizes for standardization, submitted by Factory Section, had been distributed to Purchasing Agents of Car and Truck Divisions on April 12th for comments and recommendations.

General Purchasing Committee Minutes, April 17, 1923, page 2
Report on General Contract Proposals, ordered developed at meeting of March 14, 1923.
(c) Insulating Materials
No contract to be concluded until subject of Insulating Materials is thoroughly covered and standards established.

General Purchasing Committee Minutes, April 17, 1923, page 3
Report on General Contract Proposals, ordered developed at meeting of March 14, 1923.
(g) Carbon Paper) Contract Proposals have been developed on
(h) Typewriter Ribbons) these two items and samples submitted therewith are to be investigated with a view to standardization.
Secretary advises that services of Mr. Nobes, of Buick Purchasing Department has been loaned to Purchase Section to work on the matter of standardization of Stationery Supplies etc. Mr. Nobes works with the Divisions to constitute the collection of information leading to recommendations of standards for adoption by General Purchase Committee.

General Purchasing Committee Minutes, June 6, 1923, page 1
Unfinished Business:-Reports on:
(b) Study of Thread.
Purchase Section reported that in response to letter sent out April 12th to Purchasing Agents of Car & Truck Divisions and Fisher:
Oakland replied that their specifications are practically the same in every case as recommended standards.
General Motors of Canada reported one or two variations from their specifications but see no reason why they cannot fall in line if recommended standards are adopted.

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General Motors Truck report small use of Thread but willingness to co-operate in efforts to standardize.
Fisher have forwarded copy of their standard Thread specifications which we will endeavor to work in with standards we are trying to set up.
As soon as replies have been received from Buick, Cadillac, Chevrolet and Olds the matter will be referred back to the Factory Section for reconciling reported Divisions' variations from suggested standards.
Progress report.

General Purchasing Committee Minutes, June 6, 1923, page 1
Unfinished Business:-Reports on:
(c) Study of Insulated Cable.
Factory Section reports that Chevrolet and Oakland have adopted as standard, G.M.C. tentative specifications.
G.M.Truck have adopted as standard, G.M.C. tentative specifications with exception of three starter cable leads with which they are making experiments.
Olds are very favorable to tentative specifications and have agreed to leave the wiring on the new models to Standards Division of Factory Section.
Work with Buick and Cadillac who have not yet been approached will be begun promptly.
Progress report.

General Purchasing Committee Minutes, June 6, 1923, page 2
Unfinished Business:-Reports on:
(h) Study of Cotton Wadding, Cotton Batts, Cotton and Jute Batts.
Comprehensive report of Sub-Committee from Mr. Abbott of Factory Section commenting upon the "Imperi" Batt adopted by Chevrolet. Demonstrations of the use of this Batt have been made at Buick, Cadillac, Oakland and Olds all of whom are now giving this Batt which is supplied in 300 yard lengths with a patented pleat stuffing device, a time and material cost study. The report forecasts the adoption of the use of this Batt as standard.
Progress report.

General Purchasing Committee Minutes, June 6, 1923, page 2
Unfinished Business:-Reports on:
(i) Carbon Paper)
(j) Typewriter Ribbons)
Report from Mr. Hobes of Buick Motor Company who has been conducting study of these two items for General Purchasing Committee recommending that General Motors standardize on a 7 lb. no-smutting Carbon Paper at a price of approxi-

mately $4.00 per thousand and recommending the adoption of a 290 count ribbon for general use at approximately $45.00 per gross, and a 304 count ribbon for billing purposes at $54.00 per gross received.
Decided that Secretary would send to Divisions, or have them order direct, a box of M. P. Cook Company's Beaver Brand M750, for trial with statement that this paper was being used throughout the Buick Motor Company and that upwards of $20,000.00 could be saved to General Motors through this standardization.
It is desired to be able to offer one or more competitive makes of equal quality and price, and to also offer a higher grade of paper where same is considered to be necessary for special work.
Progress report.

General Purchasing Committee Minutes, June 6, 1923, page 3
Unfinished Business:-Reports on:
(n) Flexible Metallic Conduit
Purchase Section reported that it has been determined that no two Divisions used the same sizes, with similar specifications and dimensions and that suppliers had stated that in view of these facts there would be no advantage in a contract as lower prices would depend upon quantity under one specification.
Referred to Factory Section for study leading to standardizing of sizes and specificiations.

General Purchasing Committee Minutes, June 6, 1923, page 3
Report on Contract Proposals ordered developed at Meeting of April 17, 1923.
(a) Gloves - Cloth, Leather, Acid, Electrician.
Purchase and Factory Sections.
It has been determined that these items require study for standardization before developing Contract proposals.
Study now in progress, Progress report.

General Purchasing Committee Minutes, June 6, 1923, page 3
Report on Contract Proposals ordered developed at Meeting of April 17, 1923.
(b) Brooms, all kinds.
Purchase and Factory Sections.
It has been determined that these items require study for standardization before developing Contract proposals.
Study now in progress.
Progress report.

General Purchasing Committee Minutes, June 6, 1923, page 3

Report on Contract Proposals ordered developed at Meeting of April 17, 1923

(c) Goggles - Grinders and Welders.

Purchase and Factory Sections.

It has been determined that these items require study for standardization before developing Contract Proposals. Study now in progress. Mr. Abbott of Factory Section held meeting with Safety Engineers of several of the Divisions May 25th. A number of makes of Goggles were inspected. All Divisions have been asked to order a small number of each kind of Goggles used, from Julius King Optical Company whose make was considered the best of all those exhibited. These are to be compared with Goggles now used under actual working conditions and further report made after which a standard will be recommended on which General Contract Proposals may be developed.

Brought out that representative of only one manufacturer was present at meeting. Agreed that in cases where representatives of concerns supplying any items are admitted for purpose of making demonstrations same opportunity should be afforded all.

General Purchasing Committee Minutes, August 30, 1923, page 1.

Miscellaneous Matters.

(b) Productive steel.

Secretary read notes taken at Chevrolet Forge plant indicating that while ordinary forging stock is used for Chevrolet cranks it is the belief that money would be saved through the use of special forging stock. The Forge plant uses special forging stock for all cranks except Chevrolet. Buick uses ordinary forging stock throughout. It is the belief that there must be greater economy in the use of one stock as against the other and that such matters as total scrap loss, including flash, shorts, ends, etc., the necessary machine work in order to eliminate seams where ordinary stock is used, etc., demand an exhaustive study of the matter to determine the economy of the use of ordinary forging stock as compared with special forging stock, particularly in the production of vital parts. Referred to Factory Section for study.

General Purchasing Committee Minutes, August 30, 1923, page 2.

Reports on Studies by Factory Sections:

(a) Insulated Cable.

As previously reported GMC standard specifications have been accepted by Chevrolet, General Motors Truck, Oakland, and Olds. Factory Section reports that careful study of the Buick requirements has been completed and recommendations placed before their Engineering and Purchasing Departments. That on starter cable, standard spark plug terminals, and high tension ignition cable savings in prices through the adoption of the standards are indicated amounting to about 27¢ per car. Mr. DeWaters has taken the suggested changes under advisement and sample cables for wiring of experimental cars have been delivered to him.
No further report on Cadillac.

General Purchasing Committee Minutes, August 30, 1923, page 3

Reports on Studies by Factory Sections:

(b) Cotton Wadding, Cotton Batts, Cotton & Jute Batts.

A specification for Cotton Batts has been written and submitted to batt manufacturers. This specification is now the subject of much debate among these manufacturers as how properly to describe batts and what should be the percentages of the various mixtures to produce the desired results. Definite specifications appear to be welcomed by manufacturers. Indications are that it will take some time to work out this matter.

General Purchasing Committee Minutes, August 30, 1923, page 3

Reports on Studies by Factory Sections:

(f) Gloves - Cloth, Leather, Acid, Electrician.

Specifications for leather and cloth gloves have been written and are about ready for submission.
Specifications for acid and electrician gloves are still undeveloped.

General Purchasing Committee Minutes, August 30, 1923, page 3

Reports on Studies by Factory Sections:

(g) Brooms, all kinds.

Specifications for complete line of brooms and factory brushes have been written up and are about ready for submission.

General Purchasing Committee Minutes, August 30, 1923, page 3
Reports on Studies by Factory Sections:
(h) Goggles - Welders, Grinders
Goggle recommendations are in the hands of the plants. No definite action can be taken on specifications until tests have been completed and decision reached at October meeting of the Safety Engineers.

General Purchasing Committee Minutes, August 30, 1923, page 3
Reports on Studies by Factory Sections:
(i) Acetylene & Oxygen Regulators - Line & Tank.
This subject has been well studied in all plants that are big users. Equipment of this kind found to be in an unsatisfactory state in most plants.
Work is still being carried on at the plants and it is hoped that harmony of opinion will be secured so that recommended standards may be submitted.

General Purchasing Committee Minutes, August 30, 1923, page 4
Reports on Studies by Factory Sections:
(j) Annealing and Carbonizing Boxes and Pots
Work is being done on this subject but it will be some time before definite recommendations as to standardization can be made.

General Purchasing Committee Minutes, August 30, 1923, page 4
Reports on Studies by Factory Sections:
(k) Hack Saws.
Specifications are pretty well prepared and should be ready for submission at an early date.

General Purchasing Committee Minutes, August 30, 1923, page 4
Reports on Studies by Factory Sections:
(m) Wiping Rags.
Specifications have been written up for wiping rags and cloths and have been submitted to the Secretary for submission to the standing Sub-committee.

General Purchasing Committee Minutes, September 27, 1923, page 1

Miscellaneous Matters.

(d) Motor Oils.

The question of feasibility of standardizing Motor Oil for block test and drive-aways raised by the Standing Sub-committee was brought up and the Secretary was requested to develop figures showing any savings that might accrue through such standardization.

General Purchasing Committee Minutes, September 27, 1923, page 3

Reports on Studies by Factory Section.

(a) Insulated Cable.

Tentative specifications have been printed in Book of Standards, G.M.C. Specifications Nos. 114,000 and 114,050. These specifications have been approved by Chevrolet, General Motors Truck, Oakland, Olds, and General Motors of Canada. The matter is under discussion with Buick and Cadillac. Buick's approval shortly expected.

General Purchasing Committee Minutes, September 27, 1923, page 3

Reports on Studies by Factory Section.

(b) Cotton Wadding, Cotton Batts, Cotton & Jute Batts.

Standardization of practice being required before standardization of materials can proceed, it was recommended that a committee of body trimming engineers, having a representative from each of the Car & Truck Divisions be called together for the purpose of studying and developing the matter. The factory Section was authorized to select the committee's membership through contact with Division executives and to guide the work of the committee.

General Purchasing Committee Minutes, October 25, 1923, page 3

Miscellaneous Matters.

(q) Paints - Color, Varnish.

Secretary instructed to write to Paint Committee to find out if anything towards standardization can be accomplished.

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General Purchasing Committee Minutes, October 25, 1923, page 4.
Reports on Studies by Factory Section.

(a) Insulated Cable.

Progress reported.
There have been printed and inserted in Book of Standards General Motors tentative specifications 114,000 - 114,050 which have been approved by Chevrolet, Oakland, Olds, General Motors of Canada, and General Motors Truck. Matter being developed with Buick and Cadillac. It was concluded that the matter had gone far enough to warrant development of general contract proposals for requirements of Divisions which have approved these specifications. As to the matter of further standardization the Secretary was instructed to refer the matter to General Technical Committee through the Assistant Secretary, Mr. Davidson.

General Purchasing Committee Minutes, October 25, 1923, page 4.
Reports on Studies: by Factory Section.

(b) Cotton Wadding, Cotton Batts, Cotton & Jute Batts.

Progress report.
A committee of body trimming engineers authorized at ninth meeting of General Purchasing Committee has been appointed and held its first meeting October 22. Representatives of Fisher Body attended the meeting. Active interest was displayed. A permanent chairman Mr. Kingston Forbes of Buick was elected. It is anticipated that this committee will deal advantageously with all items having to do with body trimming. Regular meetings are planned.

General Purchasing Committee Minutes, October 25, 1923, page 4.
Reports on Studies: by Factory Section.

(c) Loading or Shipping Blocks - Loading Decks.

Progress report.
A comparison and study of the estimated costs of three types of automobile loading blocks for Buick Motor Company, which included treatment of Evans or Card type wooden blocks, Forest Products Company type of wooden blocks, and Gier steel loading blocks, submitted. Indications are that very large savings can be made through the use of steel blocks. Copies of report requested for all Car and Truck Divisions. Similar study to be pursued in connection with other Divisions. Mr. Miller who had in hand order for large number of steel blocks was referred to Factory Section.

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Standing Sub-Committee Minutes, October 24, 1923, page 4 of minutes of General Purchasing Committee of October 25, 1923.

Miscellaneous Matters

(b) Motor Oils.

This item brought up due to asking of question why motor oils for block tests and drive-aways could not be standardized. Exhibit prepared by Purchase Section in conjunction with Mr. Dawson showed the following condition:

	SUMMER		WINTER	
Division.	Drive Away.	Block Test.	Drive Away.	Block Test.
Buick	A-030	A-030	A-030	A-030
Cadillac	S-40	S-40	A-020	S-40
Oakland & Olds	A-30	A-30	A-030	A-30
G.M. Truck	A-50	M-26 Northway	A-50	M-26 Northway
Chevrolet-Flint	A-30	A-30	A-30	A-30
Chevrolet-Buffalo	A-30		A-030	
Chevrolet-Tarrytown	A-30		A-030	
Chevrolet-Janesville	A-30		A-030	
Chevrolet-St. Louis	A-30		A-030	
Chevrolet-Cincinnati	Mr. Dawson has no record.			

Buick on drive-aways have been using lately a 60 viscosity oil account of mechanical trouble. Mr. Dawson is of the opinion that they will discontinue this and use the same oil for drive-aways as they do for block tests.

Investigation to determine if further standardization and securing of lower priced oil for this purpose is feasible.

Standing Sub-Committee Minutes, October 24, 1923, page 9 of minutes of General Purchasing Committee of October 25, 1923.

General Contract Developments Under Way.

(k) Pyrometers.

Referred to Metallurgical Committee for report on standardization possibilities.

Standing Sub-Committee Minutes, October 24, 1923, page 9 of minutes of General Purchasing Committee of October 25, 1923.

General Contract Developments Under Way.

(a) Flux.

Summary of general contract proposals submitted. This item is susceptible of standard specification and the Purchase Section will work in connection with Mr. Harrison and Laboratory in developing such specifications.

General Purchasing Committee Minutes, December 6, 1923, page 4.

Reports on Studies: By Factory Section.

(g) Annealing and Carbonizing Boxes and Pots.

Factory Section reports that the metallurgists agree that it

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will be necessary to standardize on analyses, shapes and sizes and that the matter will be gone in to further at the next meeting of metallurgists which will be held December 19.

Standing Sub-Committee Minutes, December 5, 1923, at page 8 of minutes of General Purchasing Committee of December 6, 1923.

General Contract Proposals to be Submitted.

(s) Oil Cans.

Summary of contract proposals together with complete exhibit of cans and holders submitted. In view of lack of standardization it was agreed that the constructive thing to do is to submit the summaries of proposals to the Divisions for their information and to send the exhibit of cans and holders to Divisions by representative of Purchase Section to see if No. 13 Can may not be standardized. If standardization is effected the matter will come up again as a general contract possibility.

General Purchasing Committee Minutes, March 7, 1924, page 3.

Reports on Studies: By Factory Section.

(p) Hack Saw Blades.

Arrangements have been made to have General Motors Laboratory conduct certain tests on blades for the purpose of determining the quality of blades required. The results will then be referred to the Metallurgical Committee for discussion as to whether written specifications are desirable and feasible.

General Purchasing Committee Minutes, March 7, 1924, page 3.

Reports on Studies: By Factory Section.

(r) Soldering Flux.

Tentative specifications have been approved by nearly all interested Divisions. Harrison Radiator giving the matter special attention.

General Purchasing Committee Minutes, March 7, 1924, page 3.

Reports on Studies: By Factory Section.

(s) Emery.

This study producing excellent results. A number of Divisions visited are having demonstrations of various grades made some of which have given results so worthwhile that orders have been placed for them. In some cases time of doing operations has been reduced and substitutions of paper-back instead of cloth-back emery paper has been made with economy.

General Purchasing Committee Minutes, March 7, 1924, page 3.
Reports on Studies: By Factory Section.
(u) Export Paper.
Tentative Specification has been approved by Technical Director of General Motors Export and is now in the hands of our Divisions for approval.

General Purchasing Committee Minutes, April 18, 1924, page 1.
Miscellaneous Matters.
(b) Approval of National Screw Thread Commission Standards.
Communication from Assistant Secretary of General Technical Committee informing our Committee of the approval of these standards and submitting same to us for approval was read. Letters from Standards Department of the Factory Section transmitting copies of NSTC standards for distribution to members of the Committee were read. The Committee approved the NSTC standards and endorsed the efforts of promoting same as most constructive work. The Standards Department will promptly distribute copies of these standards to all Divisions.

General Purchasing Committee Minutes, April 18, 1924, page 5.
Miscellaneous Matters.
(o) Babbitt.
Report a new tentative specification as follows:

Tin	83.25	Minimum	82.00
Copper	7.50	"	.50
Antimony	7.50	"	.50
Lead	1.75	"	.25
Zinc & Alumimum			None
Other Impurities		Maximum	.15

It is noted that the change is raising the lead content to 1.75% with corresponding reduction in the tin content. Cadillac has adopted this specification. This specification therefore will come into general use for connecting rod and main bearing babbitting throughout all Divisions

General Purchasing Committee Minutes, April 18, 1924, page 6.
Reports on Studies: By Factory Section.
(q) Emery.

Use of abrasive papers and cloth has been studied in the Car & Truck Divisions by an experienced man from the Carborundum Company in company with a representative from the Factory Section. Reports embodying recommendations as applied to each Division have been submitted to the Purchasing Agent of the Division concerned for transmission to the proper departments. There is on file with the Secretary a composite indexed report dealing with the results of the studies at all Divisions, copies of which may be specially prepared for those desiring same. There are evidences that some of the Divisions have effected material savings through this study. The grains, grits, etc. being already standardized, the object of the study is to determine proper selection of sizes for the purposes for which employed. When the recommended selections have been approved, the various items can be bought in the competitive market. Prices are practically uniform among the various suppliers.

General Purchasing Committee Minutes, July 2, 1924, page 5.
Report on Studies: By Special Sub-Committee.
(g) Upholstery Material.

No meetings of the Committee have been held for several months due to the members being extremely busy on changes and developments which ordinarily take place at this period of the year. However work is being carried on by individual members and some sound developments in spring construction and upholstery padding are under way. Fisher Body has now standardized on Imperi batts. Cadillac proposes to specify these on the next purchase.

General Purchasing Committee Minutes, July 2, 1924, page 6
Report on Studies: By Special Sub-Committee.
(h) Stationery Supplies.

Report of sub-committee dealing with contract developments of the adopted standards referred to the Standing Sub-committee. Secretary advised that the standard letterheads have been adopted by Cadillac, Chevrolet, Oakland, General Motors Truck, General Motors Acceptance, General Motors Export, General Motors Exchange, General Motors Overseas, General Motors Research, General Motors New York and Detroit, Hyatt, and Klaxon. Olds have approved it. Typical letterheads are being prepared for Dayton Engineering Laboratories and New Departure. The matter is being taken up with other divisions as rapidly as possible.

Standing Sub-Committee Minutes, September 4, 1924, page 8 of minutes of General Purchasing Committee of September 5, 1924.

Reports on Studies: By Special Sub-Committee.

(e) Stationery Supplies.

Standard type of letterhead being adopted at increasing rate throughout divisions.

Samples of printed forms, tags, and envelopes, etc. from all divisions being collected for use in study leading to simplification and standardization.

Standing Sub-Committee Minutes, December 12, 1924, page 4.

Reports on Studies: By General Technical Committee.

(a) Insulated Cable.

No report from General Technical Committee.

Secretary reported that Remy were making arrangements to have a machine built for coating copper strips with lead compound. As soon as this machine is installed the copper strip battery ground connections for all car divisions as approved will be put in production.

The Standards Department is working with a committee of the S.A.E. on the standardization of high tension ignition cable.

Standing Sub-Committee Minutes, December 12, 1924, page 5.

Reports on Studies: By General Technical Committee.

A representative of the Standards Department will attend the meeting of the Division of Simplified Practice of the Department of Commerce in Washington on December 18th to consider limiting the number of brake lining sizes. This same meeting will deal with limiting the number of spark plug sizes and cylinder oversizes.

Standing Sub-Committee Minutes, February 19, 1925, page 2.

Specifications Submitted for Approval for Inserting in the Book of Standards, the same having been approved by the Majority of the Divisions.

(a) Cleaners. Specification GMC 2401-M.
(b) Caustic Soda. Specification GMC 1806-M.
(c) Galvanized Flexible Steel Conduit. Specification GMC 4001-M.
(d) Car Spring Plates. Specifications GMC 51-M, 52-M, 53-M, 54-M, 55-M.

Standing Sub-Committee Minutes, February 19, 1925, page 3.

General Matters.

(c) Battery Terminal Standardization.

Ground connections made of laminated copper strip have been adopted by all divisions except Buick at an indicated saving of $15,000.00 per annum. Buick have found certain reasonable objections to the use of this connection. It is hoped that their objections may be overcome as there is an indicated saving to Buick of $12,000.00 per year.

Standing Sub-Committee Minutes, April 1, 1925, page 2.

Specifications for Approval for Insertion in Standards Books: In each of the following the designations with suffix -M will be used.

(a) Aluminum Sheet & Strip. WA99-000.
(b) Aluminum Alloy Rod and Wire. WA95-040.
(c) Alloy Tubing. WA95-041.
(d) Phosphor Bronze Sheet & Strip. WB92-080.
(e) Babbitt. 83-080-I.

Standing Sub-Committee Minutes, April 1, 1925, page 2.

Reports on Studies: By Special Sub-Committees.

(a) Cleaners.

Tentative Specification 2401-M which covers the cleaner which would be more used than any other is being put in line for manufacture. Some study has been made for cleaner for use in dishwashing. Cadillac have been running some experiments on oil soap for car washing under the specification. Work with glue manufacturers is progressing. Specification for paint for building and factory maintenance is being considered.

Standing Sub-Committee Minutes, April 30, 1925, page 4.
Reports on Studies: By Special Sub-Committees.

(a) Cleaners:

Specifications 2401-M Metal Cleaner, 2403-M Rosin Metal Cleaner, 2406-M Detergent, have been approved and are printed for insertion in the Standards Book and general contracts covering same have been made.

Specification 2405-M Cleaner for Wiping Rag Washing is in final preparation.
Specification 2402-M Cleaner and Cleanser for Dishwashing and Janitor's use is approved for submission to divisions for approval.
Specification 2404-M Painted Surface Cleaner, is approved for submission to divisions for approval.

Specification 2252-M Oil Soap for Car Washing is approved for submission to divisions for approval.

Specification for enamel remover is under study.

Standing Sub-Committee Minutes, April 30, 1925, page 3.
Reports on Studies: By Special Sub-Committees.

(b) Stationery Supplies:

Tags, All Kinds.
Standardization study actively under way.
Envelopes.
Standardization study progressing satisfactorily.
Checks.
Summary of special questionnaire to divisions just completed. Reports from several divisions lacking. This summary shows to date 20 different grades of paper used in checks and 43 different sizes of checks. Total annual expenditure exceeds $15,000.00. This matter will be referred to the Vice President in Charge of Finances for suggestion as to desirability of standardization.
Papers.
Standardization studies on hectograph, multigraph, and mimeograph papers are under way.
Form printing.
Detail report of survey of form printing has been completed and co-incident with the contracts contemplated for form printing the Printing Department will undertake to standardize forms insofar as possible.

Carbon Paper and Inked Ribbons.
Description and suggestions for the use of the several standards of carbon paper and inked ribbons adopted after criticism by the manufacturers, were recommended for printing and insertion in the Stationery Catalogue.
This was authorised done.
Six additional items for listing in Stationery catalogue were approved.

Ring Book Sheets & Indices ---
GMC 3031-M and 3032-M.
Memo Book Sheets & Indices --
GMC 3033-M.
Sectional Post Binder Sheets
& Indices -- GMC 3035-M
Automatic Pencils -- GMC 3134-M.
Line-A-Time -- GMC 3135-M.
Large Size Ruled Pads -- GMC 3136-M.

Revised write-ups on Checking Crayons GMC 3118-M and Metal Waste Basket GMC 3002-M authorized.

Standing Sub-Committee Minutes, April 30, 1925, page 3.
Reports on Studies: By General Motors Traffic Association.

(c) Loading & Shipping Blocks:
Oakland is testing the Lane block and Francis-Abbey block. Results to date indicate substantial savings through use of steel blocks. Buick is testing the Gier type steel block and reports satisfactory results to date and indicates substantial savings. It is agreed that the activity in testing steel blocks has been reflected in lower prices of wooden blocks. Our committee understands that whichever block is found to be the most economical will be acceptable to all divisions using steel blocks, whether they have tested same or not. It is further suggested that some consideration be given to the composite Gier-Lane block which is a combination of the two, having the Gier ends and Lane saddle.
Photographs of this block have been sent to the Traffic Association.

Standing Sub-Committee Minutes, April 30, 1925, page 4.

General Matters.

(c) Standardization of Net Ton.

Committee agreed that the use of net ton of 2,000 pounds in some branches of industry and of gross ton of 2,240 pounds in other branches was the result of time worn usage and that consideration might well be given to efforts to have industry standardise on the net ton of 2,000 pounds. It was agreed that this matter would be put up to the Division of Simplified Practice of the Department of Commerce with a statement that General Motors endorsed the use of the net ton.

Standing Sub-Committee Minutes, June 23, 1925, page 3.

Specifications Approved for Insertion in Standards Book.

(a) Cleaner and Cleanser for Dishwashing and Janitors' use. Spec. 2402-M.
(b) Cleaner for Painted Surfaces. Spec. 2404-M.
(c) Oil Soap for Car Washing. Spec. 2252-M.
(d) Cleaner for Removing Enamel. Spec. 2407-M.
(e) Blueprint Paper. Spec. 3151-M.
(f) Brownprint Paper. Spec. 3152-M.

In all of the above cases these specifications have been approved by a large majority of the using divisions.

Standing Sub-Committee Minutes, June 23, 1925, page 3.

Specifications Approved for Submission to Divisions.

(a) Vellum Tracing Paper.
(b) Tracing Paper.
(c) Drawing Paper.
(d) Mounted Drawing Paper.
(e) Pencil Tracing Cloth.
(f) Tracing Cloth.

Standing Sub-Committee Minutes, June 23, 1925, page 4.

Reports on Studies: By Special Committees.

(a) Cleaners:

Specifications 2401-M, 2402-M, 2403-M, 2404-M, 2406-M, 2407-M, 2252-M have all been approved for insertion in the Book of Standards, having been approved by the majority of using divisions. These, the Cleaners Committee feel cover the entire range of cleaners required for use in all divisions insofar as information in their hands lead them to

believe, with the exception of Spec. 2405-M which is a cleaner for wiping rag washing. This specification is in process of development.
The Cleaners Committee has prepared for distribution to divisions a chart showing the purposes for which each cleaner is to be used, and indicating the quantities to be used to accomplish results. Copies of this chart will be distributed to all divisions. The Cleaners Committee will promptly make a survey of the use of cleaners in all divisions, to find out where the use of cleaners is greatest and to what extent trade-name cleaners are used, for the purpose of assisting in the substitution of specification cleaners. There is a substantial difference in the prices of specification cleaners and from prices of trade-name cleaners used to accomplish the same results.
The specifications for wiping rags, brooms and gloves now in the Book of Standards are being little used. These items are referred to the Cleaners Committee for specification revision or elimination.

Standing Sub-Committee Minutes, June 23, 1925, page 4.
Reports on Studies: By Special Committees.
(b) Stationery Supplies:
The Sub-committee on Stationery Supplies has been very active in simplifying and unifying specifications for all items coming under this classification. The extensive written report submitted to our committee for consideration at this meeting could not be dealt with on account of lack of time and will be considered at the next meeting.

Standing Sub-Committee Minutes, September 23, 1925, page 3.
Specifications Approved for Insertion in Standards Books.
(a) Use Chart of General Motors Cleaners Specification.
(b) Vellum Tracing Paper. Specification 3153-M.
(c) Tracing Paper. Specification 3154-M.
(d) Drawing Paper. Specification 3155-M.
(e) Mounted Drawing Paper. Specification 3156-M
(f) Pencil Tracing Cloth. Specification 3157-M.
(g) Tracing Cloth. Specification 3158-M.
(h) Copper Ingot. Specification 4083-M and 4084-M.
(i) Tags. Specifications 3141-M, 3142-M, 3143-M, 3144-M.

Standing Sub-Committee Minutes, September 23, 1925, page 3.
Specifications for Submission to Divisions.
(a) Broaching and Tapping Oils. Tentative Specification GMC C-25.

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Standing Sub-Committee Minutes, September 23, 1925, page 4.
Reports on Studies by Special Sub-Committees.

(b) Stationery Supplies:

This sub-committee having completed the work on tag standardization are endeavoring to bring to conclusion the standardization of envelopes, paper for letterheads, and printed forms. They are also studying, with a view to making recommendations for standards, filing equipment, desks, chairs, tables, and miscellaneous office furniture.

Standing Sub-Committee Minutes, November 9, 1925, page 4.
Reports on Studies: By Special Sub-Committees.

(a) Stationery Supplies:

Papers.

This committee submitted detail specifications on proposed standard papers. Correspondence and Record, as follows:

Rag Bond -	Spec.	GMC. 3141-M
Sulphite Bond	"	GMC 3142-M
Ledger -	"	GMC 3143-M
Index Bristols	"	GMC 3144-M
Onion Skin	"	GMC 3145-M
Manilla Tag	"	GMC 3146-M
Railroad Manillas or Flat Writing	Spec.	GMC. 3147-M
Envelope Papers -		
Manillas -	Spec.	GMC. 3161-M
Kraft -	"	GMC. 3162-M
Jutes -	"	GMC. 3163-M
Bonds -	"	GMC. 3164-M
White Wove and Colored Laids	"	GMC. 3165-M

These specifications provide for gumming, packing, etc. and describe the types of envelopes and the uses for which the various grades are most suitable.

In view of the fact that the Printing Department and the Stationery Sub-committee have co-operated in a most exhaustive study of these items, the above specifications were approved and it was agreed that it would be acceptable to all divisions to depart from the usual method of submitting specifications to them for approval for authorization for printing in the Book of Standards. Printed specifications will be distributed to divisions as promptly as possible. General contract proposals on paper and envelope paper, in accordance with the above specifications, will be promptly developed.

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Tags

This committee submitted specifications for tags as follows:
GMC.-3166-M, GMC.-3167-M, GMC.-3168-M, GMC.-3169-M, GMC.-3170-M.
These were approved for insertion in the Book of Standards and general contract proposals ordered developed.
The specifications describe the uses for the various sizes, of which there are 26, and the specification number which could be most suitably and economically employed.
As a matter of information - the standardization efforts have reduced the number of sizes of tags from the present range of 113 to the proposed 26 standard sizes.

Standing Sub-Committee Minutes, December 9, 1925, page 3.
Specifications Approved for Submission to Divisions.
(a) Soda Ash Fluffy.
(b) Steel Balls.
(c) Plated Steel or Iron Automobile Parts.
(Approved by letter 10-8-25.)

Standing Sub-Committee Minutes, December 9, 1925, page 3.
Specifications Approved for Insertion in Standards Book.
(a) Broaching & Tapping Oils. G.M.C. C-25.
(b) Plated Steel or Iron Automobile Parts.

Standing Sub-Committee Minutes, January 28, 1926, page 2.
Specifications Approved for Submission to Divisions.
(a) Revised Steel Specifications.
(b) Flexible Steel Conduit & Tubing.
(c) Oil Hardening Steel.
(d) Revised Specifications of all Lubricating and Cutting Oils.

Standing Sub-Committee Minutes, January 28, 1926, page 2.
Specifications for Insertion in Standards Book.
(a) Tank Car Outages.
(b) Soda Ash Fluffy. 1803-M.
(c) Steel Balls.

Standing Sub-Committee Minutes, March 26, 1926, page 3.
Specifications Approved for Submission to Divisions.
(a) Gloves and Mittens, Revised. Deferred.
(b) Brooms & Brushes, Revised. Deferred.
(c) Trisodium Phosphate.

Standing Sub-Committee Minutes, March 26, 1926, page 3.
Specifications Approved for Insertion in Standards Book.
(a) Bar Steel Specifications.
(b) Tool Steel Specifications.
(c) Flexible Steel Conduit and Tubing.
(d) Changes in Oil Specifications.

Standing Sub-Committee Minutes, June 8, 1926, page 3.
Specifications Approved for Insertion in Standards Book.
(a) Trisodium Phosphate.

Standing Sub-Committee Minutes, August 12, 1926, page 2.
General Matters.
(e) Standardization of Drill Jig Bushings.
The committee approved the suggestion of the Standards Section that efforts be made to standardize Drill Jig Bushings, the range of which includes plain, slip, press fit, and liner bushings, and authorized submission to Sub-committee on Taps and Gages, with the request that they conduct a preliminary study to determine the desirability of such a standard and if so found, conduct a complete study leading to development of standards.

Standing Sub-Committee Minutes, November 9, 1926, page 2.
General Matters.
(d) Tags.
Resume of reports of application of recommended tag standardization from a number of divisions was read. It was indicated that those divisions who have attempted to apply tag standardization have effected substantial savings. On account of the varied requirements and the differential in prices applying to specific quantities of one specification it was not considered that a general contract is feasible until divisions have worked out and applied standardization much more extensively.

Standing Sub-Committee Minutes, December 14, 1926, page 4.
Specification Approved for Submission to Divisions.
(a) Transmission and Rear Axle Lubricants.
Specification A-200.

Standing Sub-Committee Minutes, December 14, 1926, page 4.
Items Approved for Insertion in Standards Book.
(a) Distributor Nipple. GMC 120095.

Standing Sub-Committee Minutes, January 18, 1927, page 3.
Specifications Approved for Submission to Divisions.
(a) Petroleum. Specification 4544M.
(b) Asbestos Mittens.

Standing Sub-Committee Minutes, January 18, 1927, page 3.
Specifications Approved for Insertion in Standards Book.
(a) GMC. 1601-M to 1605-M Inc. Buffing Wheels.
(b) GMC. 2262-M. New Mill Wiping Cloth.
(c) GMC. 2271-M. Polishing Cloth.
(d) GMC. 2272-M. Cheese Cloth.

Standing Sub-Committee Minutes, March 15, 1927, page 2.
General Matters.
(j) Tags.
Item (a) page 1 of minutes of meeting of January 28, 1926. Copies of contract proposals together with typical exhibit of tag sizes and stocks were forwarded to divisions and attention called to economy of standardization. Recent check-up discloses that Chevrolet has saved in 1926, $6,169.80 by standardization of tags, and indicated that if A.C.Spark, Armstrong, Brown-Lipe-Chapin, Cadillac, Delco-Light, Harrison, Inland, Muncie, Oakland, Olds, Remy, Saginaw, United Motors and General Motors Detroit standardized so that general contract could be made, an additional $6,108.00 could be saved. Committee believes that a general contract will not produce these savings unless standardization is first effected.

Standing Sub-Committee Minutes, March 15, 1927, page 6.
Specifications Approved for Submission to Divisions.
(a) Brooms and Brushes.
(b) Friction Tape.

Standing Sub-Committee Minutes, April 12, 1927, page 4.
Specifications Approved for Submission to Divisions.

(a) Tap Standards.
(b) Distributor Grease. GMC. 4539-M..
(c) Universal Joint Fibre Grease #7. GMC. 4540-M.

Standing Sub-Committee Minutes, May 10, 1927, page 3.
Specifications Approved for Insertion in Standards Book.

(a) Distributor Grease. GMC. 4539-M.
(b) Universal Joint Fibre Grease. #7. GMC. 4540-M.
(c) Friction Tape.

Standing Sub-Committee Minutes, October 11, 1927, page 5.
Specifications Approved for Insertion in Standards Book.

(a) Standardization of Minor Diameters for Threaded Holes.
(b) Minor Changes in Gage Construction.

Standing Sub-Committee Minutes, November 8, 1927, page 3.
Specifications Approved for Submission to Divisions.

(a) New Ply Double Leather Belting. GM.1102-MX.
(b) Tripoli. GM.1606-MX.
(c) Copper Buffing Compound - Greasy. GM.1607-MX.
(d) Copper Buffing Compound - Dry. GM.1608-MX.
(e) Emery Cake. GM.1609-MX.
(f) Grease Stick. GM.1610-MX.
(g) Polishing Cloth. GM.2271-MX.
(h) Cheesecloth. GM.2272-MX.
(i) Corn and Rattan Factory Brooms. GM.2285-MX.
(j) All Corn Office Brooms. GM.2286-MX.
(k) Office Floor Brushes. GM.2288-MX.
(l) Heavy Duty Floor Brush. GM.2294-MX.
(m) Machinist Whisk Brooms. GM.2287-MX.
(n) Bench or Counter Brushes. GM.2297-MX.
(o) Sanitary Brushes. GM.2298-MX.
(p) Round Sash Tool Brushes, GM.2300-MX.
(q) Medium Weight Hand Leathers - With Thumb. GM.2305-MX.
(r) Factory Gloves - Rough. GM.2314-MX.
(s) Lightweight Tan Reinforced Acid Gloves. GM.2392-MX.
(t) Flat Trimmer or Sash Brushes 2". GM.2501-MX.
(u) Varnish Brushes - Triple Thick. GM.2502-MX.
(v) Wall Brushes 4". GM.2503-MX.
(w) Round Marking or Artist Brushes-Dome Point. GM-2504-MX.
(x) Platers Brushes, GM.2505-MX.
(y) Scrub Brushes. GM.2506-MX.
(z) Moulders Brushes. - Soft, GM.2507-MX.

(aa) Wire Scratch Brushes. GM.2508-MX.
(bb) Shoe Handle Wire Scratch Brushes. GM.2509-MX.
(cc) Special Cylinder Bore Brushes. GM.2510-MX.
(dd) Rubber Aprons. GM.2601-MX.
(ee) Belting Standards & Application.
(ff) Standard Grades & Specifications for Upholstery Leather.

Standing Sub-Committee Minutes, November 8, 1927, page 3.
Specifications Approved for Insertion in Standards Book.
(a) Wood Screw Holes. (At request of Yellow Truck & Coach Mfg. Co.)
(b) Paste Cutting Compound.
(c) Rolled Brass Split Bushings.
(d) Metal Cleaner - Chemical Composition.

Standing Sub-Committee Minutes, December 8, 1927, page 4.
Specifications Approved for Insertion in Standards Book.
(a) Steel No. 1070.
(b) Transmission Oil. A-150.
(c) Welding Rod. GM.3509-M.
(d) Boss Ideal Unit Lock Nut.

Standing Sub-Committee Minutes, January 17, 1928, page 4.
Specifications Approved for Submission to Divisions.
(a) Plain Ring Gage Standards.
(b) Master Ring and Ring Gages for Checking Holes, etc.
(c) Deck Brushes. GM.2299-M.
(d) Plain White Acid Rubber Mittens. GM.2391-M.
(e) Canvas Gloves. GM.2331-M.
(f) Oil Soap.

Standing Sub-Committee Minutes, January 17, 1928, page 6.
Specifications for Submission to Divisions
(a) New Ply Double Leather Belting. GM.1102-MX.
(b) Tripoli. GM.1606-MX.
(c) Copper Buffing Compound - Greasy. GM.1607-MX.
(d) Copper Buffing Compound - Dry. GM.1608-MX.
(e) Emery Cake. GM.1609-MX.
(f) Grease Stick. GM.1610-MX.
(g) Polishing Cloth. GM.2271-MX.
(h) Cheesecloth. GM.2272-MX.
(i) Corn and Rattan Factory Brooms. GM.2285-MX.

(j) All Corn Office Brooms. GM.2286-MX.
(k) Office Floor Brushes. GM.2288-MX.
(l) Heavy Duty Floor Brush. GM.2294-MX.
(m) Machinist Whisk Brooms. GM.2287-MX.
(n) Bench or Counter Brushes. GM.2297-MX.
(o) Sanitary Brushes. GM.2298-MX.
(p) Round Sash Tool Brushes. GM.2300-MX.
(q) Medium Weight Hand Leathers - With Thumb. GM.2305-MX.
(r) Factory Gloves - Rough. GM.2314-MX.
(s) Lightweight Tan Reinforced Acid Gloves. GM.2392-MX.
(t) Flat Trimmer or Sash Brushes 2". GM.2501-MX.
(u) Varnish Brushes - Triple Thick. GM.2502-MX.
(v) Wall Brushes 4". GM.2503-MX.
(w) Round Marking or Artist Brushes-Dome Point. GM-2504-MX.
(x) Platers Brushes. GM.2505-MX.
(y) Scrub Brushes. GM.2506-MX.
(z) Moulders Brushes. - Soft. GM.2507-MX.
(aa) Wire Scratch Brushes. GM.2508-MX.
(bb) Shoe Handle Wire Scratch Brushes. GM.2509-MX.
(cc) Special Cylinder Bore Brushes. GM.2510-MX.
(dd) Rubber Aprons. GM.2601-MX.
(ee) Belting Standards & Application.
(ff) Standard Grades & Specifications for Upholstery Leather.
(gg) Foundry Coke.
(hh) Refrigeration Oil. S-075.
(ii) Center Drill Standards.
(jj) Revision C-60. Soluble Oil.
(kk) Blueprint & Brownprint Paper.
(ll) Plain Ring Gage Standards.
(mm) Master Ring and Ring Gages for Checking Holes, etc.
(nn) Deck Brushes. GM.2299-M.
(oo) Plain White Acid Rubber Mittens. GM.2391-M.
(pp) Canvas Gloves. GM.2331-M.
(qq) Oil Soap.

Standing Sub-Committee Minutes, March 13, 1928, page 4.
Specifications Approved for Insertion in Standards Book.
(a) Deck Brushes. GM.2299-M.
(b) Plain White Acid Rubber Mittens. GM.2391-M.
(c) Canvas Gloves. GM.2331-M.
(d) Oil Soap for Car Washing.

Standing Sub-Committee Minutes, April 17, 1928, page 2.
General Matters.
(f) Standardization of Twist Drills.
The Sub-committee on Taps and Gages recommends, as a result of their standardization studies, that drill contracts and orders include the following specifications -

1 - Barrels of all taper shank drills must not show more than .0025 indicator reading out of truth with shank.

2 - Welded taper shanks must adhere to the barrel throughout the entire life of drill. Should separation occur at or near the weld, while in use in the shop, the shanks only may be returned for full credit.
It is assumed that defective weld prevails when 1/4 to 1/2" of the barrel projects below the separated shank.

3 - Until such time as General Motors Standards, on twist drill construction, come into being, Manufacturers' standard practice in the matter of rockwell hardness, degree of twist, web thickness, length of flute, width of margin, general workmanship, etc., will be acceptable.

Standing Sub-Committee Minutes, May 8, 1928, page 3.
Items Approved for Insertion in Standards Book.
(a) Light Factory Towels.
(b) Medium Factory Wiping Towels.
(c) Carburizing Compound.

Standing Sub-Committee Minutes, September 13, 1928, page 2.
Specifications Approved for Insertion in Standards Book.
(a) Cylindrical Plug Gages - Range .059 to .240.
(b) Woodruff Keyseat Gages.
(c) Shell End Mills.
(d) Twisted Wire Brushes - GMC.2511-M.
(e) Machine Bolts.
(f) Nuts.

Standing Sub-Committee Minutes, November 13, 1928, page 2.
Specifications Approved for Insertion in Standards Book.
(a) Refrigeration Oil S-075.
(b) Fibre Brooms, GM.2394-M.
(c) Cylindrical Hole Tolerances.
(d) Tap Drivers.
(e) Woodruff Keyslot Cutters.
(f) Thread Ring Gages.
(g) Setting Plugs for Threading Gages.
(h) Plug & Ring Gages for Checking Taper Shanks and Handles 0 to .240.

Standing Sub-Committee Minutes, November 13, 1928, page 2.
Specifications Approved for Submission to Divisions.

(a) Slotted Head Screws and Common Nuts.
(b) Blind Nuts.
(c) Nickel Buffing Compound, GMC.1613-M.
(d) Muslin Buffs. GMC.1603-M, 1604-M, 1611-M, 1612-M, 1615-M, 1616-M, 1617-M, 1618-M.
(e) Asbestos Aprons. GMC.2602-M.
(f) Flat Varnish Brushes. GMC.2513-M.
(g) Twisted Bristle Brushes. GMC.2512-M.
(h) Plain & Slab Milling Cutters.
(i) Plain Ring Gage Standards.
(j) Side Milling Cutters.
(k) Bent Shank Tapper Tap Standards.

Standing Sub-Committee Minutes, December 11, 1928, page 5.
Specifications Approved for Insertion in Standards Books.

(a) Plain and Slab Milling Cutters.
(b) Plain Gage Standards.
(c) Side Milling Cutters.
(d) Bent Shank Tapper Tap Standards.

Standing Sub-Committee Minutes, January 15, 1929, page 3.
Specifications Approved for Submission to Divisions.

(a) GM.1205-M. - Wrapped Air Hose.
(b) GM.1206-M. - Braided Air Hose.
(c) GM.1207-M. - Steam Hose.
(d) GM.1208-M. - Sand Blast Hose.

Standing Sub-Committee Minutes, January 15, 1929, page 3.
Specifications Approved for Insertion in Standards Books.

(a) Slotted Head Screws and Common Nuts.
(b) Blind Nuts.
(c) Nickel Buffing Compound. - GM.1613-M.
(d) Muslin Buffs - GM.1603-M, 1604-M, 1611-M, 1612-M, 1615-M, 1616-M, 1617-M, 1618-M.
(e) Asbestos Aprons. - GM.2602-M.
(f) Flat Varnish Brushes - GM.2513-M.
(g) Twisted Bristle Brushes - GM.2512-M.
(h) Woodruff Keyslot and Keyways.

Standing Sub-Committee Minutes, February 12, 1929, page 4.
Specifications Approved for Submission to Divisions.

(a) Foundry Coke.
(b) Wrapped Air Hose. (GM.1205-M)

(c) Braided Air Hose. (GM.1206-M)
(d) Steam Hose. (GM.1207-M)
(e) Sand Blast Hose. (GM.1208-M)
(f) Revised Section S - Standards Book.
(g) Chromium Buffing Compound - Green. (GM.1614-M)
(h) Goggles. (Mr. Dunnebacke's recommendation)

Standing Sub-Committee Minutes, May 7, 1929, page 3.
Specifications Approved for Submission to Divisions.
(a) Plain Cylindrical & Thread Plug Gages. 1.510 to 4.510.
(b) Woodruff Keyslot Cutter Drivers.
(c) Woodruff Keyslots and Keyways.
(d) Extension Sockets.
(e) Drill Drivers.

Standing Sub-Committee Minutes, May 7, 1929, page 3.
Specifications Approved for Insertion in Standards Books.
(a) Air, Gas and Oxygen Hose. - GMC 1205-M.
(b) Steam Hose. - GMC 1607-M.
(c) Sand Blast Hose. - GMC 1608-M.
(d) Chromium Buffing Compound - Green. - GMC 1614-M.

Standing Sub-Committee Minutes, June 11, 1929, page 3.
Specifications Approved for Submission to Divisions.
(a) Single Nickel Salts - GMC 1817M.
(b) Double Nickel Salts - " 1818M.
(c) Gas Welding Rod - " 3510-1-2-3M.
(d) Arc Welding Rod - " 3514-5M.
(e) Cold Water Hose - GMC 1209M.
(f) Tubular and Split Rivets.
(g) Incandescent Lamps.
(h) Straight Shank End Mills.
(i) Straight Shank End Mill Drivers.
(j) Bending Allowances for Cold Rolled Sheet Steel.
(k) Tensile and Shearing Strengths of Bolts, Screws and Rivets.

Standing Sub-Committee Minutes, July 23, 1929, page 2.
Specifications Approved for Submission to Divisions.

(a) Straight Shank Drills.
(b) Tap Driver Holders - Floating Design.
(c) Counterbore and Spot Facer Std's.
(d) Straight Shank Machine Reamers.
(e) Spot Facer and Counterbore Drivers.
(f) Unit Chord Tables - GM Standards.
(g) Starter Gear Center Dimension Tables - GM Standards.

Standing Sub-Committee Minutes, November 13, 1929, page 3.
Specifications Approved for Submission to Divisions.

(a) Foundry Coke.
(b) Goggles. (Mr. Dunnebacke's recommendation)
(c) Bending Allowances for Cold Rolled Sheet Steel.
(d) Incandescent Lamps.
(e) Tensile and Shearing Strengths of Bolts, Screws and Rivets.
(f) Unit Chord Tables.
(g) Starter Gear Center Dimension Tables.
(h) Center Drill Drivers.
(i) Hack Saw Blades.
(j) Taper Shank End Mills.
(k) Fuel Pump Mountings.
(l) Recommended Practice Chart for Standard Cleaners.
(m) Medium Weight Reinforced Acid Gloves.
(n) Transmission Nomenclature.
(o) Plating Specifications.

Standing Sub-Committee Minutes, January 14, 1930, page 3.
Specifications Approved for Submission to Divisions.

(a) Foundry Coke.
(b) Goggles. (Mr. Dunnebacke's recommendation).
(c) Bending Allowances for Cold Rolled Sheet Steel.
(d) Incandescent Lamps.
(e) Tensile and Shearing Strengths of Bolts, Screws and Rivets.
(f) Unit Chord Tables.
(g) Starter Gear Center Dimension Tables.
(h) Center Drill Drivers.
(i) Hack Saw Blades.
(j) Taper Shank End Mills.
(k) Fuel Pump Mountings.
(l) Recommended Practice Chart for Standard Cleaners.
(m) Medium Weight Reinforced Acid Gloves.
(n) Transmission Nomenclature.
(o) Plating Specification.

Standing Sub-Committee Minutes, March 13, 1930, page 3.
Specifications Inserted in Standards Books.

(a) Bending Allowances for Cold Rolled Sheet Steel.
(b) Starter Gear Center Dimension Tables.
(c) Center Drill Drivers.
(d) Hack Saw Blades.
(e) Taper Shank End Mills.
(f) Recommended Practice Chart for Standard Cleaners.
(g) Medium Weight Reinforced Acid Gloves.
(h) Tensile & Shearing Strengths of Bolts, Screws & Rivets.
(i) Transmission Nomenclature.
(j) Plating Specifications.
(k) Half Side Milling Cutters.

Standing Sub-Committee Minutes, May 13, 1930, page 3.
Specifications Approved for Submission to Divisions.

(a) Kraft Wrapping Paper.
(b) Hand Bottoming Taps.
(c) Straight Shank Drills - Long Series.
(d) Metal & Wood Cutting Band Saws.
(e) Sheet Metal & Wire Sizes.
(f) Keys & Keyways for Cutters & Arbors.
(g) Drill Sizes for Taper Pins.
(h) Screw Threads - Large Diameter - 16 Pitch Series.
(i) Standard Sections for Brake Levers.

Standing Sub-Committee Minutes, September 16, 1930, page 4.
Specifications Approved for Submission to Divisions.

(a) Incandescent Lamps.
(b) Fuel Pump Mountings.
(c) Straight Shank Drills - Long Series.
(d) Arbors for Checking Drill & Reamer Drivers.

Standing Sub-Committee Minutes, May 12, 1931, page 3.
Specifications Approved for Insertion in Standards Book.

(a) Leather Belting - GM.1104 to 1109M.
(b) Factory Towels - GM.2264M.
(c) Transmission Oil - GM.4592M.
(d) Soldering Flux - GM.1863-4M.
(e) Aluminum Welding Flux - GM.1865M.
(f) Brass & Bronze Welding & Brazing Flux - GM.1866M.
(g) Cast Iron Welding Flux - GM.1867M.
(h) Brazing Flux - GM.1868M.
(i) Electrical Nomenclature.

E

Defendant's Exhibit (GM) No. 154

GENERAL MOTORS CORPORATION
SUMMARY OF
CONTRACTS APPROVED
BY GENERAL PURCHASING COMMITTEE

Item No.	Mtg. No.	Committee (1)	Date of Action	Product Contracted	Supplier	Portion Of Requirements (2)	Kind Of Discount (3)	Participation	Term of Contract
1	2	GPC	1/4/23	Carbon Steel Bars	Carnegie Steel Co.	70%			
	"	"	"	"	Cambria Steel Co.	15%			
	"	"	"	"	Open to Divisions	15%			
2	"	"	"	Alloy Steels	Carnegie & Illinois Steel Co.	26 2/3%			
	"	"	"	"	United Alloy Steel Corp.	40%			
	"	"	"	"	Central Steel Co.	20%			
	"	"	"	"	Open to Divisions	13 1/3%			
3	"	"	"	Sheet Steel	Amer. Sheet & Tin Plate Co.	30%			
	"	"	"	"	Amer. Rolling Mills Co.	20%			
	"	"	"	"	Open to Divisions	50%			
4	3	"	2/7/23	Adding Machines	Burroughs Adding Mach. Co.	ROSM			Renewed
5	"	"	"	Motors	General Electric Co.	ROSM			Renewed
6	"	"	"	Lineatimes	Lineatime Co.	ROSM			Renewed
7	4	"	3/14/23	Stove & Carriage Bolts	Ireland & Matthews Mfg. Co.				
8	"	"	"	Miniature Incandescent Lamps	Miniature Incandescent Lamp Corp.				
9	"	"	"	Cleaning Materials	J. B. Ford Co.				
10	"	"	"	Carbonizer	Case Hardening Co.				Renewed to 12/31/23
	"	"	"	"	Alfred O. Blaich Co.				Extended from 7/1/23 to 12/31/23
11	"	"	"	Solder					
12	"	"	"	Carbon Paper					
13	"	"	"	Typewriter Ribbons					

(1) GPC = General Purchasing Committee. SSC = Standing Sub-Committee. (2) ROSM = Requirements of Seller's make. (3) M.P. = Multiple Product Quantity Discount. Red line signifies contracts with du Pont. Green line signifies contracts with du Pont's competitors.

[4821]

7023

Item No.	Mtg. No.	Committee (1)	Date of Action	Product Contracted	Supplier	Portion Of Requirements (2)	Kind Of Discount (3)	Participation	Term of Contract
14	4	GPC	3/14/23	Babbitt					
15	"	"	"	Coal	Bertha Coal Co.	60%			
16	5	"	4/17/23	Cup Grease	American Oil Corp.			Chev. Optional (except Flint)	6 Mos. 4/12/23 to 10/12/23
17	"	"	"	Brass & Copper - Sheets &	American Brass Co.	75%			To 12/31/23
				Rods - Heavy Tubing	Mich. Brass & Copper Co.	25%			"
18	6	"	6/6/23	Cyanide - Copper - Sodium - Zinc	Charles Hardy & Ruperti Co.				From 5/16/23 to 11/16/23
19	"	"	"	Furniture	Globe Wernicke Co.	ROSM			
20	"	"	"	Cap Screws - Milled from bar	Automatic Products Co.	All			6 Mos. Ending 12/31/23
21	"	"	"	Cap Screws - Cold Upset	Michigan Lock Co.	4,000,000 to 5,000,000		Chevrolet Excepted	3rd quarter
22	"	"	"	Carriage Bolts	Kirk Latty Mfg. Co.	1/3			3rd quarter
				3/8 x 6 and Smaller	Russell Birdsall & Ward Bolt & Nut Co.	1/3			"
					Ireland & Matthews Mfg. Co.	1/3			6 Mos. from 7/1/23
23	"	"	"	Stove Bolts	Kirk Latty Mfg. Co.				3rd quarter
					Russell Birdsall & Ward Bolt & Nut Co.				"
					Ireland & Matthews Mfg. Co.				"
24	"	"	"	Brass & Copper Tubing	United Wire & Supply Co.	60%			6 Mos. Ending 12/31/23
					Wolverine Tube Co.	20%			"
					Rome Hollow Wire & Tube Co.	20%		Chevrolet Only	"

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7024

Item No.	Mtg. No.	Committee (1)	Date of Action	Product Contracted	Supplier	Portion Of Requirements (2)	Kind Of Discount (3)	Participation	Term of Contract
25	6	GPC	6/6/23	Special Cutting Steel	Haynes Stellite Co.	Req.			
26	7	"	8/2/23	Miniature Mazda Lamps	Bryan-Marsh Div. of General Electric				Renewed
27	"	"	"	Transformers	General Electric Co.	ROSM			Renewed
28	"	"	"	Enclosed Fuses & Renewals	Chicago Fuse Mfg. Co.	ROSM			6 Mos.
29	"	"	"	Lock Washers	Amer. Nut Bolt & Fastener Co.	25%			From 7/24/23 to 6/30/24
					Reliance Mfg. Co.	25%			"
					Mansfield Lock Washer Co.	50%			"
30	"	"	"	Leather Belting	Detroit Oak Belting Co.	1/3		Except-Chev. Flint	6 Mos. from 8/2/23
					Schwartz Belting Co.	1/3		"	"
					Saythe Despard Co.	1/3		"	"
					S. R. Sike Co.	All		Chev.Flint Only	"
31	"	"	"	Oil Tanks & Pumps	S. F. Bowser & Co. Inc.				1 year from 8/2/23
32	"	"	"	Electric Drills, Grinders, & Accessories	Black & Decker Mfg. Co.	ROSM			7/13/23 to 6/20/24
33	1	SSC	8/13/23	Carbon Paper .7 lb. and Pencil grades	M. B. Cook & Co.	Req.			6 Mos.
34	"	"	"	Typewriter Ribbons	Caxton Laboratories, Inc.	Req.			6 Mos.
35	"	"	"	Fire Extinguishers (Pyrene)	Buhl & Sons	Req.			6 Mos. from 8/13/23
36	"	"	"	Lockers	Lyon Metallic Co.	ROSM			
37	"	"	"	Scales	Toledo Scale Co.	ROSM			

(1) GPC = General Purchasing Committee. SSC = Standing Sub-Committee. (2) ROSM = Requirements of Seller's make. (3) M.P. = Multiple Product Quantity Discount. Red line signifies contracts with du Pont. Green line signifies contracts with du Pont's competitors.

[4823]

7025

Item No.	Mtg. No.	Committee (1)	Date of Action	Product Contracted	Supplier	Portion of Requirements (2)	Kind of Discount (3)	Participation	Term of Contract
38	3	SSC	9/21/23	Cutting Oil C-63	Detroit Soluble Oil Co.			All	
39	"	"	"	Soluble Oil C-60	Detroit Soluble Oil Co.			All-Buick Opt.	
				C-70	"			"	
40	"	"	"	Machine Oils for Shop	Standard Oil Co.			Midwest Locations	
				Lubrication M-16	Atlantic Refining Co.			Eastern Locations	
				M-26 - M-50	Standard Oil Co.			Midwest Locations	
					Sun Oil Co			Eastern Locations	
				S-9	Atlantic Refining Co.			"	
					Standard Oil Co.			Midwest Locations	
				S-7	Atlantic Refining Co.			Eastern Locations	
					Standard Oil Co.			Midwest Locations	
				S-012	Atlantic Refining Co.			Eastern Locations	
					Standard Oil Co.			Janesville-StLouis	
					Cities Service Co.			Midwest Locations	
				S-13	Standard Oil Co.			"	
					Sinclair Refining Co.			Eastern Locations	
				S-14	Atlantic Refining Co.			"	
					Standard Oil Co.			Midwest Locations	
				S-18	Sun Oil Co.			All	
41	"	"	"	Oils for Power Plant	White Star Refining Co.			Midwest Locations	
				Lubrication P-10				(Buick Optional)	
					Atlantic Refining Co.			Eastern Locations	
				P-9	Texas Co.			All	
								(Buick Optional)	
				P-12 - P-13 - P-15	Cities Service Co.			Midwest Locations	
								(Buick Optional)	
					Atlantic Refining Co.			Eastern Locations	
				P-26	White Star Refining Co.			All	
								(Buick Optional)	
				P-16	Cities Service Co.			All	
								(Buick Optional)	

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4824

9204

Item No.	Mtg. No.	Committee (1)	Date of Action	Product Contracted	Supplier	Portion Of Requirements (2)	Kind Of Discount (3)	Participation	Term of Contract
42	3	SSC	9/21/23	Transmission & Differential Lubricants A9-A15	Standard Oil Co.			Midwest Locations (Buick Optional)	
					Sun Oil Co.			Eastern Locations	
43	"	"	"	Motor Oils . A-020	Sinclair Oil Co.			Cadillac (Branches Optional)	
				S-40	Standard Oil Co.			Cadillac (Branches Optional)	
				A-80	Cities Service Co.			G.M.C. Truck	
				A-30	Standard Oil Co.			Midwest Locations	
					Sinclair Oil Co.			Buffalo-Tarrytown	
				A-030	Sinclair Oil Co.			All (Buick Optional)	
				A-50	Standard Oil Co.			Oakland - Oldsmobile	
				A-050	Sinclair Oil Co.			Oakland - Oldsmobile	
44	"	"	"	Carriage Bolts	Kirk-Latty	28%			
					Russell, Burdsall, & Ward	28%			
					Berry Brothers	10 2/3%			
45	"	"	"	Stove Bolts	Kirk-Latty	28%			
					Russell, Burdsall, & Ward	28%			
					Berry Brothers	10 2/3%			
46	"	"	"	Dissolved Acetylene	Prest-O-Lite Co.	ROSM			Renewed
47	"	"	"	Adding Machine	Burroughs Adding Mach. Co.	ROSM			12 Mos.
					Dalton Adding Mach Co.	ROSM			12 Mos.
48	"	"	"	Machine Bolts	Columbus Bolt	40%			
					Russell, Burdsall, & Ward	10%			
					Berry Brothers	10%			
					Kirk-Latty	40%			

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2825

2202

Item No.	Mtg. No.	Committee (1)	Date of Action	Product Contracted	Supplier	Portion of (2) Required	Kind of (2) Discount	Participation	Term of Contract
49	3	SSC	9/21/23	Step Bolts	Kirk-Latty	75%			
					Berry Brothers	10%			
					Columbus Bolt	15%			
50	"	"	"	Machine Screws	Keystone Screw	22½%			
					Pheoll Mfg. Co.	22½%			
					Carbin Screw	27½%			
					Reed & Prince	15%			
					National Screw	12½%			
51	"	"	"	Wood & Drive Screws	Fred H. Holmes	8½%			
					Carbin Screw	35%			
					National Screw	22½%			
					Keeler Brass	22½%			
					Reed & Prince	6½%			
					Sampson & Rowland	5%			
52	"	"	"	Lag Screws	Columbus Bolt	20%			
					Kirk-Latty	40%			
					Russell, Burdsall, & Ward	40%			
53	"	"	"	Nuts-Cold Pressed	Russell, Burdsall & Ward	40%			
				Milled	Foster	40%			
					American Nut	10%			
					Detroit Nut	10%			
				Castle	Russell, Burdsall, & Ward	100%			
54	"	"	"	Plain Washers	Wrought Washer Co.	100%			
55	"	"	"	Cotter Pins	American Steel	100%			
56	"	"	"	Rivets - Plain Steel	Russell, Burdsall & Ward	50%			
					Ireland & Matthews	30%			
					Brainard Steel	20%			

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4936

8204

Item No.	Mtg. No.	Committee (1)	Date of Action	Product Contracted	Supplier	Portion Of (2) Require.	Kind Of (3) Discount	Participation	Term of Contract
57	3	SSC	9/21/23	Standard Taper Pins	Belvidere Screw	100%			
58	"	"	"	Steel	Central Steel Co				For 4th quarter volume
					Amer. Sheet & Tin Plate				"
					United Alloy & Steel Corp.				"
59	"	"	"	Cap Screws	Victor-Peninsular Co.				
60	"	"	"	Coal	Bertha - Consumers Co.	60%			9/1/23 to 4/1/24
61	"	"	"	Liquid Soap	West Disinfecting Co.			Eastern Locations	
					C. H. Baldwin			Western Locations	
62	9	GPC	9/27/23	Machines (accounting)	Elliott Fisher Co.	ROSM			
63	10	"	10/25/23	Oakite	Oakley Chem. Co.	ROSM			1 year from 10/25/23
64	5A	SSC	10/24/23	Drills, Cutters, Reamers	Nat'l Twist Drill Co.	ROSM			Renewed
65	"	"	"	Cleaning Materials	J. B. Ford Co.				Renewed
66	"	"	"	Packings	Garlock Packing Co.				Renewed
67	"	"	"	Motors & Control Equipment	General Electric Co.	ROSM			
68	"	"	"	Dry Cells					
69	"	"	"	Thread	Dean & Sherk			Cadillac Opt.	6 Mos.
70	5B	SSC	12/5/23	Flake & Granulated Caustic	Dow Chemical Co.				
71	"	"	"	Soda Ash	Clement F. Kross			Michigan	
					Sunshine Soda Co.			Other Points	

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Item No.	Mtg. No.	Committee (1)	Date of Action	Product Contracted	Supplier	Portion Of(2) Require.	Kind Of(2) Discount	Participation	Term of Contract
72	5B	SSC	12/5/23	Sal Soda	Detroit Soda Prod. Co.				
73	5B	SSC	12/5/23	Cyanide - Sodium, Copper	Charles Hardy & Ruperti				
74	"	"	"	Drills, Cutters, Reamers	Nat'l. Twist Drill Co.				1 year
75	"	"	"	Brass & Copper Tubes	Wolverine Tube Co.	1/3			1st 6 Mos. of 1924
					United Wire & Supply Co.	1/3			"
					Rome Hollow Wire & Tube Co.	1/3			"
76	"	"	"	Cap Screws (Milled)	Automatic Products Co.	75%			1st 6 Mos. of 1924
					Federal Screw Works	25%			"
77	"	"	"	Cap Screws (Cold Upset)	Victor Peninsular Co.	50%			1st quarter of 1924
					Foster Bolt & Nut Co.	50%			"
78	"	"	12/6/23	Cup Grease	Standard Oil Co			Midwest Locations	To 6/1/24
					Swan & Finch			Eastern Locations	"
79	12	GPC	1/2/24	Carbon Steel	Carnegie Steel Co.	80%			
80	6	SSC	12/20/23	Leather	General Leather Co.	75%			2 years from 1/1/24
81	7A	SSC	1/3/24	Carbonizing Compound	E. F. Houghton & Co.			(B-L-C Optional)	
82	8	SSC	3/7/24	Machine Oils for Shop Lubrication	Standard Oil Co.	ROSM			
					Texas Co.	ROSM			
					Cities Service Oil Co.	ROSM			
					American Oil Corp.	ROSM			

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20830

4828

Item No.	Mtg. No.	Committee (1)	Date of Action	Product Contracted	Supplier	Portion Of(2) Require.	Kind Of(3) Discount	Participation	Term of Contract
83	8	SSC	3/7/24	Oils for Spindle, Blending & Refrigeration	Standard Oil Co.	ROSM			
					Sun Oil Co.	ROSM			
					Texas Co.	ROSM			
					Sinclair Refining Co.	ROSM			
					Cities Service Oil Co.	ROSM			
					Franklin Oil & Gas Co.	ROSM			
84	"	"	"	Transmission & Differential Lubricants	Sun Oil Co	ROSM			
					Standard Oil Co.	ROSM			
85	"	"	"	Motor Oil	Standard Oil Co.	ROSM			
					Texas Co.	ROSM			
					Sinclair Refining Co.	ROSM			
86	"	"	"	Cutting & Soluble Oils	American Oil Corp.	ROSM			
					Franklin Oil & Gas Co.	ROSM			
					Standard Oil Co.	ROSM			
					Texas Co.	ROSM			
87	"	"	"	Dry Cells	National Carbon Co.	Req.			1 year
88	7B	SSC	2/21/24	Car Frames	A. O. Smith Co.			Except Chevrolet	
89	"	"	"	Renewable Fuses	Chicago Fuse Mfg. Co.	Req.	Quantity		To 7/31/24
90	"	"	"	Carbon Paper	M. B. Cook & Co.	Req.			To 8/31/24
91	"	"	"	Typewriter Ribbons	Caxton Laboratories	Req.			To 8/31/24
92	"	"	"	Leather Belting	Smyth, Despard Co.	50%		Chev. Optional	To 7/31/24
					I. B. Williams	30%		"	"
					Open to Divisions	20%		"	"
93	"	"	"	Line-A-Time	Line-A-Time Mfg. Co.	ROSM			To 1/20/25

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6289

2031

Item No.	Mtg. No.	Committee (1)	Date of Action	Product Contracted	Supplier	Portion or (2) Require.	Kind of (3) Discount	Participation	Term of Contract
94	7B	SSC	2/21/24	Miniature Incandescent Lamps	Bryan-Marsh Div. General Electric Co.	Req.			To 2/1/25
95	7B	SSC	2/21/24	Large Incandescent Lamps	Bryan-Marsh Div. General Electric Co.	Req.			To 2/1/25
96	"	"	"	Acetylene & Oxygen	Air Reduction Sales Co.	Req.			To 4/1/25
97	"	"	"	Motors & Control Equipment	Howell Electric Co.	ROSM			To 12/31/24
					Crocker-Wheeler Co.	"			"
					Westinghouse Elec. & Mfg. Co.	"			To 6/4/25
98		GPC	4/18/24	Aluminum	Alum. Co. of America	100%			For 3rd quarter
99	9	SSC	4/18/24	Cutting Machines	Universal Machine Co.	ROSM			1 year
					Eastman Machine Co.	ROSM			"
100	"	"	"	Stellite	Haynes Stellite Co.	ROSM			1 year from 6/1/24
101	"	"	"	Oil Cans	W. B. Marvin Co.	Req.		Oakland-Cadillac- excepted	From 7/1/24 to 12/31/24
102	"	"	"	Oil Can Holders.		Req.			From 7/1/24 to 12/31/24
103	"	"	"	Misc. Electrical Supplies	Westinghouse Elec. & Mfg. Co.	ROSM			From 7/1/24 to 12/31/24
104	"	"	"	Fire Extinguishers	Foamite-Childs Corp.	ROSM			To 9/19/24
105	"	"	"	Corrugated Pressed Steel Platforms for Elevating Trucks	Youngstown Pressed Steel Co.	ROSM			1 year from 4/18/24
106	"	"	"	Detergent #6	Bruce Products Co.	Req.			To 12/31/24
107	"	"	"	Acetylene & Oxygen	Prest-O-Light Co.				Extended to 4/15/25

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6830

Item No.	Mtg. No.	Committee (1)	Date of Action	Product Contracted	Supplier	Portion Of (2) Require.	Kind Of (3) Discount	Participation	Term of Contract
108	9	SSC	4/18/24	Gasoline	Standard Oil Co.				Extended to 2/28/25
109	"	"	"	Solder	National Lead Co.			Midwest Locations	To 4/1/25
110	10	SSC	7/1-2/24	Electric Tools	Black & Decker Mfg. Co.	ROSM			1 year from 6/20/24
111	"	"	"	Brass & Copper Tubing	Dallas Brass & Copper Co.	40%			6 Mos. from 7/1/24
					Wolverine Tube Co.	40%			"
					Open to Divisions	20%			"
112	"	"	"	Cup Grease G-2 2½-3	Standard Oil Co.	Req.			6 Mos. from 7/1/24
113	"	"	"	Cap Screws (milled from bar)	Automatic Products Co.	80%			6 Mos. from 7/1/24
					Open to Divisions	20%			"
114	"	"	"	Cyanide - Copper	Charles Hardy Inc.				6 Mos from 7/1/24
				Sodium	Roessler Hasslacher				"
115	"	"	"	Stationery Supplies	Tower Bros.				1 year from 7/1/24
116	"	"	"	Toilet Paper	Sanitary Products Co.	Req.			1 year from 7/1/24
117	"	"	"	Paper Towels	Sanitary Products Co.	Req.			1 year from 7/1/24
118	"	"	"	Scales	Howe Scale Co.	ROSM			1 year from 7/1/24
119	"	"	"	Oil Tanks & Pumps	Wayne Tank Co.	ROSM			1 year from 7/1/24
120	"	"	"	Oil Tanks & Pumps	S. F. Bowser & Co.	ROSM			1 year from 8/9/24
121	"	"	"	Automatic Scales	Toledo Scale Co.	ROSM			1 year from 8/31/24
122	"	"	"	Typewriter Ribbons		Req.			6 Mos. from 8/31/24

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2033

2031

Item No.	Mtg. No.	Committee (1)	Date of Action	Product Contracted	Supplier	Portion Of (2) Require	Kind Of (3) Discount	Participation	Term of Contract
123	10	SSC	7/1-2/24	Carbon Paper		Req.			6 Mos. from 8/31/24
124	"	"	"	Steel Lockers	Lyon Metallic Co.	ROSM			1 year from 8/31/24
125	"	"	"	Transformers	General Electric Co.	ROSM			1 year from 8/16/24
126	"	"	"	Adding Machines	Burroughs Adding Machine Co.	ROSM			1 year from 9/6/24
127	"	"	"	Motors	Allis Chalmers Mfg. Co.	ROSM			1 year from 8/31/24
128	16	GPC	9/5/24	Storage Batteries	U.S. Light & Heat Corp.	25%			5 years from 1/1/26
129	11	SSC	9/4/24	Leather Belting	Smyth-Despard Co.	40%			From 9/1/24 to 3/1/25
					Schwartz Belting Co.	40%			"
					Open to Divisions	20%			"
130	"	"	"	Fuses & Renewals	Chicago Fuse Mfg. Co.	Req.	Quantity		From 8/1/24 to 1/31/25
131	"	"	"	Soluble Cutting Oil C-60 - C-70	Franklin Oil & Gas Co.	100%		All (Jaxon-Hyatt Optional)	6 Mos 9/1/24 to 2/28/25
132	"	"	"	Cutting Oil "B" C-63	Franklin Oil & Gas Co.			Ohio & Eastern Locations- (Hyatt Optional)	6 Mos. 9/1/24 to 2/28/25
133	"	"	"	Toilet Paper & Paper Towels - Rolls Only	Beecher-Pick-Lewis	Req.			To 6/30/25
134	"	"	"	Rosin Cleaner #3	Bruce Products Corp	Req.			To 12/31/24
135	"	"	"	Liquid Soap 15%-20%	Sanitary Supplies Co.	Req.			1 year to 9/30/25
				35%	Rochester Germicide Co.	Req.			"

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4837

Item No.	Mtg. No.	Committee (1)	Date of Action	Product Contracted	Supplier	Portion Of Requirements (2)	Kind Of Discount (3)	Participation	Term of Contract
136	12	SSC	11/6/24	Goggles & Face Masks	American Optical Co.	ROSM		Chev. Flint Excepted	1 year from 10/29/24
137	"	"	"	Goggles & Face Masks	Willson Goggles, Inc.	ROSM			1 year from 11/15/24
138	12	SSC	11/6/24	Fire Extinguishers	Pyrene Mfg. Co.	ROSM			To 9/30/25
139	"	"	"	Scales	Fairbanks, Morse Co.	ROSM			1 year from 11/15/24
140	"	"	"	Oakite	Oakley Chemical Co.	ROSM			1 year from 11/1/24
141	"	"	"	Packings	Garlock Packing Co.	ROSM			1 year from 1/1/25
142	"	"	"	Motors	General Electric Co.	ROSM			1 year from 1/1/25
					Howell Elec. Motor Co.	ROSM			"
					Crocker Wheeler Co.	ROSM			"
					Westinghouse Elec. & Mfg. Co.	ROSM			"
143	13	SSC	12/12/24	Aluminum	Alum. Co. of America	Req.			1st 6 mos. of 1925
144	"	"	"	Cap Screws - Milled	Automatic Products Co.	Req.			6 mos.
145	"	"	"	Cleaning Materials	J. B. Ford Co.	ROSM			Calendar year 1925
146	"	"	"	Rosin Cleaner - GM - 2403M	Industrial Chem. Co.	Req.			Calendar Year 1925
147	"	"	"	Detergent #6- GM- 2406-M	Bruce Products Co.	Req.			Calendar year 1925
148	"	"	"	Pyroxylin Finishes	E. I. du Pont de Nemours Co.	Req.			1st 6 mos. 1925
149	"	"	"	Motors	Ideal Elec. & Mfg. Co.	ROSM			Year 1925
				Motors and Transformers	Wagner Electric Corp.	ROSM			"

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2035

Item No.	Mtg. No.	Committee (1)	Date of Action	Product Contracted	Supplier	Portion Of Requirements (2)	Kind Of Discount (3)	Participation	Term of Contract
150	13	SSC	12/12/24	Cup Grease - G-2 - 2½ - 3	Standard Oil of Ind.	Req.		Chev-Buffalo-Toledo-Tarrytown-Norwood Excepted	Calendar year 1925
151	"	"	"	Cyanide - Copper - Sodium	Charles Hardy, Inc.	Req.			1st 6 mos. of 1925
152	"	"	"	Drills, Cutters, Reamers	Nat'l. Twist Drill Co.	ROSM			From 12/12/24 to 12/31/25
153	"	"	"	High Speed Steel Hobs	Barber-Colman Co.	ROSM			Calendar year 1925
154	"	"	"	Oil Cans	W. B. Marvin Mfg. Co.	Req.			1st 6 mos. of 1925
155	"	"	"	Oil Can Holders	Harter Rolled Metals Co.	Req.		Buick, Excepted	1st 6 mos. of 1925
156	"	"	"	Sal Soda GM - 1802-M	Eaton Clark Co.	Req.		Mich. & Eastern Points	12/11/24 to 6/30/25
					Buckeye Products Co.	Req.		Ohio & Western Points	12/11/24 to 6/30/25
157	"	"	"	Soda ash GM- 1801-M	C. F. Kross			LCL- Mich. Points CL- All Points	12/11/24 to 6/30/25
					Wing & Evans			LCL- All other Points	12/11/24 to 6/30/25
158	"	"	"	Caustic Soda	Dow Chemical Co.	Req.		All	12/11/24 to 6/30/25

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2834

20:36

Item No.	Mtg. No.	Committee (1)	Date of Action	Product Contracted	Supplier	Portion Of Requirements (2)	Kind Of Discount (3)	Participation	Term of Contract
159	13	SSC	12/12/24	Cold Drawn Tubing	Dallas Brass & Copper Co.	25%			1st 6 mos. of 1925
					Rome Hollow Wire Co.	40%			"
					A. H. Wells & Co., Inc.	15%			"
					Open to Divisions	20%			
									"
160	"	"	"	Lamps - Miniature	Bryan-Marsh Div.	ROSM			1 year from 2/1/25
					Miniature Incandescent Lamp Co.	ROSM			"
161	"	"	"	Line-A-Time	Line-A-Time Mfg. Co.	ROSM			1 year from 1/20/25
162	"	"	"	Fuses & Renewals	Chicago Fuse Co.				1 year from 2/1/25
163	"	"	"	Motor Lists	R. L. Polk & Co.				1 year from 1/1/25
164	"	"	"	Carbonizers	E. F. Houghton & Co.				Extended to 3/31/25
165	14	"	2/19/25	Carbon Paper	M. B. Cook Co.	Req.			1 year from 3/1/25
166	"	"	"	Typewriter Ribbons	M. B. Cook Co.	Req.			1 year from 3/1/25
167	"	"	"	Leather Belting	Smyth-Despard Co.	40%			6 mos. from 3/1/25
					Schwartz Belting Co.	40%			"
					Open to Divisions	20%			"
168	15	SSC	3/6/25	Dry Cells	National Carbon Co.	Req.			1 year from 3/1/25
169	"	"	"	Flashlight Batteries & Cases	Burgess Battery Co.	ROSM			1 year from 3/1/25
170	"	"	"	Stellite	Haynes Stellite Co.	ROSM			1 year from 3/1/25
171	"	"	"	Large Incandescent Lamps	Bryan-Marsh Div. of General Electric Co.	ROSM			1 year from 5/1/25

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8835

7037

Item No.	Mtg. No.	Committee (1)	Date of Action	Product Contracted	Supplier	Portion Of Requirements (2)	Kind Of Discount (3)	Participation	Term of Contract
172	15	SSC	3/6/25	Cutting Machines	Eastman Machine Co.	ROSM			1 year from 5/1/25
					Universal Cutter Co.	ROSM			
173	16	SSC	4/1/25	Acetylene & Oxygen	Air Reduction Sales Co.	Req.		Delco Lgt.- Dayton Eng.-Inland G.M. Research- Excepted Cadillac Optional	1 year from 5/16/25
174	"	"	"	Carbonizing Compound	E. F. Houghton & Co.				Extended to 6/30/26
175	17	SSC	4/30/25	Car Frames	A. O. Smith Corp.				3 years from 7/1/25
176	"	"	"	Bushings	Cleveland Graphite Bronze Co.	ROSM	Quantity		Year 1925
177	"	"	"	Metal Cleaner- GM-2401-M	H. A. Montgomery	Req.			5/1/25 to 12/31/25
178	"	"	"	Carbonizing Compound	E. F. Houghton & Co.	Req.			Renewed to 12/31/25
179	"	"	"	Stationery Supplies	Tower Bros. Stat. Co.	Req.			Renewed to 12/31/25
180	"	"	"	Fire Extinguishers	Foamite-Childs Corp.	ROSM			Renewed to 6/30/26
181	"	"	"	Misc. Elec. Supplies	Westinghouse Elec. & Mfg. Co.	ROSM			Renewed
182	18	SSC	5/22/25	Cold Drawn Brass & Copper Tubing	Roberts Tube Works	30,000 lbs. per mo.			6 mos. from 7/1/25
183	"	"	"	Oil Tanks & Pumps	Wayne Tank & Pump Co.	ROSM			1 year from 7/1/25

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2838

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Item No.	Mtg. No.	Committee (1)	Date of Action	Product Contracted	Supplier	Portion Of (2) Require	Kind Of (3) Discount	Participation	Term of Contract
184	19	SSC	6/23/25	Caustic Soda	Dow Chemical Co.	Req.		Chevrolet - Optional	6 mos. to 12/31/25
185	"	"	"	Sal Soda	Detroit Soda Products Co.			C.L. Lots	6 mos. to 12/31/25
					Eaton Clark Co.			L.C.L. Lots	"
								Chevrolet - Optional	
186	"	"	"	Cyanide - Copper - Sodium	Charles Hardy, Inc.	Req.		Jaxon - Optional	6 mos. to 12/31/25
187	"	"	"	58% Soda Ash - Standard & Fluffy	Detroit Soda Products Co.	Req.			6 mos. to 12/31/25
188	"	"	"	Oil Cans	W. B. Marvin Co.	Req.			6 mos. to 12/31/25
189	"	"	"	Oil Can Holders	Globe Stamping & Mach. Co.	Req.			6 mos. to 12/31/25
190	"	"	"	Toilet Paper in Packages	Sanitary Products Corp.	Req.			6 mos. to 12/31/25
191	"	"	"	Toilet Paper in Rolls	A.P.W. Company	Req.			12 mos. to 6/30/26
192	"	"	"	Tool Steel Specs. 41-M 42-M	D. W. & H. A. Kuhn	50%-plus			1 year to 6/30/26
193	19	SSC	6/23/25	Union Fuses & Renewals	Chicago Fuse Mfg. Co.	ROSM			1 year to 7/31/26
194	"	"	"	Motors & Control Equipment	Allis Chalmers Mfg. Co.	ROSM			1 year to 8/13/26
195	"	"	"	Oil Tanks & Pumps	S. F. Bowser & Co.	ROSM			1 year to 8/9/26
196	"	"	"	Transformers	General Electric Co.	ROSM			1 year to 8/16/26
197	20	GPC	6/24/25	Vacuum Tanks	Stewart-Warner Speedometer Corp.	Req.			Renewed for 1926

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4837

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Item No.	Mtg. No.	Committee (1)	Date of Action	Product Contracted	Supplier	Portion Of Requirements (2)	Kind Of Discount (3)	Participation	Term of Contract
198	20	GPC	6/24/25	Pyroxylin Finishes	E. I. du Pont de Nemours Co.	100%	Quantity		Last 6 mos. 1925
199	"	SSC	9/23/25	Carbon Tool Steel	Ludlum Steel Co.	50%-plus			1 year from 10/1/25
200	"	"	"	Abrasives - Cloth - Paper	Carborundum Co.	ROSM			7/1/25 to 12/31/25
					Baeder Adamson Co.	ROSM			"
					H. H. Barton & Son Co.	ROSM			"
					American Glue Co.	ROSM			"
					Hermann Behr & Co., Inc.	ROSM			"
					Manning Abrasive Co.	ROSM			"
					Minn. Mining & Mfg. Co.	ROSM			"
201	"	"	"	Steel Lockers	Lyon Metallic Mfg. Co.	ROSM			1 year 9/1/25 to 8/31/26
202	"	"	"	Scales	Toledo Scale Co.	ROSM			1 year 9/1/25 to 8/31/26
203	"	"	"	Adding Machines	Burroughs Adding Mach. Co.	ROSM			1 year 9/6/25 to 9/6/26
204	"	"	"	Flow Meters	Republic Flow Meter Co.	ROSM			1 year 9/15/25 to 9/15/26
205	"	"	"	Fire Extinguishers	Pyrene Mfg. Co.	ROSM			1 year from 10/1/25
206	"	"	"	Adding Machines	Dalton Adding Mach. Co.	ROSM			1 year from 9/26/25
207	21	GPC	9/24/25	Car Lubricating Systems	Alemite-Zerk Corp.	75%-plus	Quantity		
208	"	SSC	11/9/25	Liquid & Oil Soap for car washing	Sanitary Supplies Co.				1 year from 11/11/25

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Item No.	Mtg. No.	Committee (1)	Date of Action	Product Contracted	Supplier	Portion Of (2) Require	Kind Of (3) Discount	Participation	Term of Contract
209	21	SSC	11/9/25	Abrasive Paper & Cloth-Coated	American Glue Co.	ROSM			1 year from 12/31/25
					Baeder Adamson Co.	"			"
					L. H. Barton & Son	"			"
					Hermann Bahr & Co.	"			"
					Carborundum Co.	"			"
					Manning Abrasive Co.	"			"
					Minn. Mining & Mfg. Co.	"			"
					U.S. Sand Paper Co.	"			"
210	"	"	"	Scales	Fairbanks Morse & Co.	ROSM			1 year from 11/15/25
211	"	"	"	Aluminum	Alum. Co. of America	Req.			6 mos. 1/1/26 to 6/30/26
212	"	"	"	Oil Cans	W. B. Marvin Mfg. Co.	Req.			6 mos. from 12/31/25
213	"	"	"	Carboniser	E. F. Houghton & Co.	ROSM			6 mos. from 12/31/25
214	"	"	"	Hobs, H.S. Steel	Barber Colman Co.	ROSM			1 year from 12/31/25
215	"	"	"	Motors, Elec. Control Equipment & Repair Parts	Crocker-Wheeler Co.	ROSM			1 year from 12/31/25
216	"	"	"	Motors	General Electric Co.	ROSM			1 year from 12/31/25
					Howell Electric Co.	"			"
217	"	"	"	Motors, Elec. Apparatus	Ideal Electric Co.	ROSM			1 year from 12/31/25
218	"	"	"	Motors	Westinghouse Elec. & Mfg. Co.	ROSM			1 year from 12/31/25
219	"	"	"	Packings	Anchor Packing Co.	ROSM			1 year from 12/31/25
					Garlock Packing Co.	"			"
220	"	"	"	Tools, Elec. Drills, Grinders & Accessories	Black & Decker Mfg. Co.	ROSM			1 year from 12/31/25

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Item No.	Mtg. No.	Committee (1)	Date of Action	Product Contracted	Supplier	Portion Of (2) Require	Kind Of (3) Discount	Participation	Term of Contract
221	22	SSC	12/9/25	Oil Can Holders	Vassar Steel Products Co.	Req.			6 mos. from 1/1/26
222	"	"	"	58% Soda Ash GM-1801-M	Detroit Soda Products Co.	Req.			6 mos. from 1/1/26
223	"	"	"	Soda Ash Fluffy GM-1803-M	Detroit Soda Products Co.	Req.			6 mos. from 1/1/26
224	"	"	"	Caustic Soda GM-1806-M	Dow Chemical Co.	Req.			1 year from 1/1/26
225	"	"	"	Sal Soda GM-1802-M	Eaton Clark Co.	Req.			6 mos. from 1/1/26
226	"	"	"	Metal Cleaners GM-2401-M	H. A. Montgomery & Co.	Req.			6 mos. from 1/1/26
227	"	"	"	Cleaner & Cleanser GM-2402-M	J. B. Ford Co.	Req.			6 mos. from 1/1/26
228	"	"	"	Rosin Cleaner GM-2403-M	Industrial Chem. Prod. Co.	Req.			6 mos. from 1/1/26
229	"	"	"	Painted Surface Cleaner GM-2404-M	H. A. Montgomery & Co.	Req.			6 mos. from 1/1/26
230	"	"	"	Detergent GM-2406-M	Lava Co. of America	Req.			6 mos. from 1/1/26
231	"	"	"	Cyanide - Sodium Copper	Charles Hardy, Inc. "	Req. Req.		Jaxon. Optional	6 mos. from 1/1/26 "
232	"	"	"	Cup Grease G2- 2½- 3	Standard Oil Co. of Ind.	Req.		Chev. Buffalo Bloomfield- Norwood Tarrytown & Toledo- Optional	1 year from 1/1/26
233	"	"	"	Drills, Cutters, Reamers	Nat'l. Twist Drill Co.	Req.		Cadillac- Optional	1 year from 1/1/26

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Item No.	Mtg. No.	Committee (1)	Date of Action	Product Contracted	Supplier	Portion Of (2) Require	Kind Of (3) Discount	Participation	Term of Contract
234	22	SSC	12/9/25	Fibre	Spaulding Fibre Co.	75%-plus			1 year from 12/15/25
235	"	"	"	Milling Cutters	Goddard & Goddard Co., Inc.	ROSM	Quantity		1 year from 1/1/26
236	"	"	"	Anti-Freeze	Carbide & Carbon Chem. Corp.	Req.			1 year from 12/1/25
237	"	"	"	Line-A-Time	Line-A-Time Mfg. Co.	ROSM			1 year from 1/20/26
238	"	"	"	Miniature Incandescent Lamps	Tung-Sol Lamp Works				1 year from 1/31/26
239	23	SSC	1/28/26	Stationery Supplies	Tower Bros. Stat. Co.	Req.			1 year from 1/1/26
240	"	"	"	White Lead in Oil - Dry White Lead	National Lead Co.	Req.			6 mos. from 1/1/26
241	"	"	"	Paint & Varnish Type Materials	E. I. du Pont de Nemours	ROSM			1 year from 1/1/26
242	"	"	"	Pyroxylin Finishes, Duco & Duco Thinner	E. I. du Pont de Nemours	100% G.M. 50%-plus of F.R.C.	Quantity		1/1/26 to 12/31/26
243	"	"	"	Drill Jig Bushings	Ex-Cell-O Tool & Mfg. Co.	ROSM			1 year from 2/1/26
244	"	"	"	Stellite	Haynes Stellite Co.	ROSM			1 year from 3/1/26
245	"	"	"	Miniature Mazda Lamp	Mich. Lamp Div. of G.E.	Req.			1 year from 3/1/26
246	"	"	"	Diamonds					
247	24	SSC	3/26/26	Carbon Paper & Typewriter Ribbons	Kee-Lox Mfg. Co.	Req.			6 mos. from 4/1/26

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Item No.	Mtg. No.	Committee (1)	Date of Action	Product Contracted	Supplier	Portion Of Requirements (2)	Kind of Discount (3)	Participation	Term of Contract
248	24	SSC	3/26/26	Elliott-Fisher Rolls Pencil Carbon Papers	F. S. Webster Co.	ROSM		Quick Deferred	6 mos. from 4/1/26
249	"	"	"	Flashlight Batteries, Cases & Dry Cells	Burgess Battery Co.	ROSM			1 year from 3/1/26
250	"	"	"	Columbia Dry Cells	National Carbon Co.	Req.			1 year from 3/1/26
251	"	"	"	Files	Continental File Co.	ROSM			6 mos. from 4/1/26
252	"	"	"	Motors & Transformers	Wagner Electric Corp.	ROSM			1 year from 1/2/26
253	"	"	"	Taps, Dies, Gauges	Greenfield Tap & Die Corp.	ROSM	Quantity		1 year from 4/1/26
254	"	"	"	Postage Meters	Pitney-Bowes Co.	ROSM			1 year from 11/1/25
255	"	"	"	Blue Print Paper	The Huey Co.	ROSM			4/1/26 to 12/31/26
256	"	"	"	Misc. Electrical Supplies	Westinghouse Elec. & Mfg. Co.	ROSM			Renewed to 6/30/27
257	"	"	"	Cutting Machines	Eastman Machine Co.	ROSM			Renewed from 5/1/26 to 6/30/27
					Universal Cutter Co.	"			"
258	"	"	"	Oil Tanks & Pumps	Wayne Tank & Pump Co.	ROSM			Renewed from 6/1/26 to 12/31/26
259	"	"	"	Large Mazda Lamps	Mich. Lamp Div. of G.E.	Req.			Renewed 1 year from 6/1/26
260	"	"	"	Aluminum	Alum. Co. of America	Req.			Renewed 6 mos. from 7/1/26

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Item No.	Mtg. No.	Committee (1)	Date of Action	Product Contracted	Supplier	Portion Of Requirements (2)	Kind Of Discount (3)	Participation	Term of Contract
261	24	SSC	3/26/26	Fibre	Spaulding Fibre Co.	Req.			Extended to 4/1/27
262	25	SSC	6/8/26	Vacuum Tanks	Stewart-Warner Corp.	Req.		Buick, Oakland-Olds-(Cadillac Optional)	1 year from 7/1/26
263	"	"	"	Cyanide- Sodium- Copper	Charles Hardy, Inc.	Req.			6 mos. from 7/1/26
264	"	"	"	Carbonizing Compounds	E. F. Houghton Co.	80%			6 mos. from 7/1/26
265	"	"	"	Metal Cleaner - GM-2401-M) Painted Surface Cleaner-) GM-2404-M)	H. A. Montgomery Co., Inc.	Req.			1 year from 7/1/26
266	"	"	"	Rosin Cleaner - GM-2403-M	Industrial Chem. Prod. Co.	Req.			1 year from 7/1/26
267	"	"	"	Cleaner & Cleanser - GM-2402-M	Detroit Soda Products Co.	Req.			1 year from 7/1/26
268	"	"	"	Files	Cleveland File Co.	ROSM			6 mos. from 7/1/26
269	"	"	"	Oil Gages & Ammeters	Sterling Mfg. Co.	ROSM			1 year from 7/1/26
270	"	"	"	Oxygen & Acetylene	Air Reduction Sales Co.	Req.			To 6/30/27
271	"	"	"	Hospital Supplies	Parke Davis & Co.	ROSM			1 year from 7/1/26
272	"	"	"	White Lead in Oil - Dry White Lead	Carter White Lead Co.				Renewed for 6 mos. from 7/1/26
273	"	"	"	Sal Soda GM-1802-M	Eaton Clark Co.				Renewed for 6 mos. from expiration

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20-15

Item No.	Mtg. No.	Committee (1)	Date of Action	Product Contracted	Supplier	Portion Of Requirements (2)	Kind Of Discount (3)	Participation	Term of Contract
274	25	SSC	6/8/26	58% Soda Ash & Fluffy	Detroit Soda Products Co.				Renewed for 1 year from expiration
275	"	"	"	Union Fuses & Renewals	Chicago Fuse Mfg. Co.				Renewed for 1 year from expiration
276	"	"	"	Oil Tanks & Pumps	S. F. Bowser & Co.	ROSM			Renewed for 1 year from expiration
277	"	"	"	Transformers	General Electric Co.	ROSM			Renewed for 1 year from expiration
278	"	"	"	Motors & Control Equipment	Allis-Chalmers Mfg. Co.	ROSM			Renewed for 1 year from expiration
279	"	"	"	Scales	Toledo Scale Co.	ROSM			Renewed for 1 year from expiration
280	"	"	"	Lockers, Steel	Lyon Metallic Mfg. Co.				Renewed for 1 year from expiration
281	"	"	"	Flow Meters	Republic Flow Meter Co.				Renewed for 1 year from expiration
282	"	"	"	Fire Extinguishers	Pyrene Mfg. Co.	ROSM			Renewed for 1 year from expiration
283	26	SSC	6/17/26	Tools	Bullard Machine Tool Co.	ROSM	Quantity		1 year from 7/1/26
284	27	SSC	7/13/26	Error - No Machines	Error - No Machine Co.	ROSM			1 year from 7/1/26
285	"	"	"	Piston Rings & Piston Pins	McQuay-Norris Mfg. Co.	ROSM			1 year from 7/1/26
286	"	"	"	Fuses & Renewals	Bussmann Mfg. Co.	ROSM			1 year from 8/1/26

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Item No.	Mtg. No.	Committee (1)	Date of Action	Product Contracted	Supplier	Portion Of Requirements (2)	Kind Of Discount (3)	Participation	Term of Contract
287	27	SSC	7/13/26	Carbon Steel	Carnegie Steel Co.				Accepted for 3rd quarter
288	28	SSC	7/23/26	Detergent GM- 2406-M	Bruce Products Co.	Req.			1 year from 7/1/26
289	"	"	"	Motor Controllers	Cutler-Hammer Mfg. Co.	ROSM			1 year from 7/1/26
290	29	"	8/12/26	Office Furniture	Shaw-Walker Co.	ROSM	M.P.		1 year from 9/1/26
291	"	"	"	Trisodium Phosphate	Industrial Chemical Co.	Req.			1 year from 9/1/26
292	"	"	"	Any C.C.B. Co. products	Cleveland Graphite Bronze Co.		M.P.		Extended 1 year from 1/1/27
293	"	"	"	Goggles & Head Masks	American Optical Co.	ROSM			Renewed for 1 year from Expiration
294	"	"	"	Mailing Machines	Postage Meter Co.	ROSM			Renewed for 1 year from Expiration
295	"	"	"	Files	Continental File Co.	ROSM			Renewed for 1 year from Expiration
296	"	"	"	Any du Pont products	E. I. du Pont de Nemours Co.		M.P.		10/1/26 to 9/30/27
297	30	SSC	9/29/26	Goggles & Head Masks	Willson Goggles Inc.	ROSM			Renewed 1 year from Expiration
298	"	"	"	Scales	Fairbanks, Morse & Co.	ROSM			Renewed 1 year from Expiration
299	31	SSC	10/12/26	Internal Grinding Spindles	Ex-Cell-O Tool & Mfg. Co.	ROSM	Quantity		Retroactive to 3/1/26
300	"	"	"	Files	Heller Brothers Co.	ROSM			1 year from 11/1/26

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Item No.	Mtg. No.	Committee (1)	Date of Action	Product Contracted	Supplier	Portion Of (2) Require	Kind Of (3) Discount	Participation	Term of Contract
301	31	SSC	10/12/26	Chucks	H. Horton & Son Co.	ROSM	Quantity		1 year from 11/1/26
302	32	SSC	11/9/26	Oil Soap for Car Washing	Sanitary Supplies, Inc.	Req.			1 year from 11/11/26
303	"	"	"	Lubricating Fittings	Bassick Mfg. Co.	Req.			10/1/26 to 6/30/28
304	"	"	"	Steel Lockers, Racks, Shelving	Durand Co.	ROSM			1 year from 10/1/26
305	"	"	"	Calculating Machines	Monroe Calculating Mach. Co.	ROSM	Quantity		Retroactive to 1/1/26
									Extended 1 year from 1/1/27
306	"	"	"	Machinery & Equipment	Potter & Johnson Mach. Co.	ROSM	Quantity		1 year from 10/10/26
307	"	"	"	Cutters, Reamers, Holes, etc.	Illinois Tool Works	ROSM	Quantity		1 year from 1/1/27
308	"	"	"	Tools, Electric Drills, Grinders & Accessories	Black & Decker Mfg. Co.	ROSM			1 year from 1/1/27
309	"	"	"	Packings	Anchor Packing Co.	ROSM			1 year from 1/1/27
					Garlock Packing Co.	"			"
310	"	"	"	Hobs, High Steel	Barber-Colman Co.	ROSM	Quantity		1 year from 1/1/27
311	"	"	"	Motors	Howell Electric Motors Co.	ROSM	Quantity		1 year from 1/1/27
					Westinghouse Elec. & Mfg. Co.	"	Quantity		"
					General Electric Co.	"	Quantity		"
					Crocker-Wheeler Co.	"	Quantity		"
					Wagner Electric Corp.	"	Quantity		"
312	"	"	"	Pyroxylin Finishes & Thinner	E.I. du Pont de Nemours Co.	ROSM	Quantity		1 year from 1/1/27
313	"	"	"	Paint & Varnish Type Materials	E.I. du Pont de Nemours Co.	ROSM	Quantity		1 year from 1/1/27

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2048

Item No.	Mtg. No.	Committee (1)	Date of Action	Product Contracted	Supplier	Portion Of (2) Require	Kind Of (3) Discount	Participation	Term of Contrac
314	32	SSC	11/9/26	Abrasive Papers & Clothcoated	American Glue Co.	ROSM	Quantity		1 year from 1/1/27
					Armour Sand Paper Works	"	Quantity		"
					Baeder Adamsen Co.	"	Quantity		"
					Herman Behr & Co.Inc.	"	Quantity		"
					H.H. Barton & Son Co.	"	Quantity		"
					Carborundum Co.	"	Quantity		"
					Meaning Abrasive Co.	"	Quantity		"
					Minn. Mining & Mfg. Co.	"	Quantity		"
					U.S. Sand Paper Co.	"	Quantity		"
315	"	"	"	Milling Cutters	Goddard & Goddard Co.	ROSM	Quantity		1 year from 1/1/27
316	"	"	"	Stationary Supplies	Tower Bros. Stat. Co.	Req.			1 year from 1/1/27
317	"	"	"	Blueprint & Brownprint Paper	The Huey Co.	ROSM			6 Mos. from 1/1/27
318	"	"	"	Transformers	Wagner Electric Corp.	ROSM	Quantity		1 year from 1/1/27
319	"	"	"	Aluminum	Aluminum Co. of America	Req.			6 Mos. from 1/1/27
320	"	"	"	White Lead in Oil - Dry White Lead	National Lead Co.	ROSM			1 year from 1/1/27
321	"	"	"	Files	Cleveland File Co.	ROSM	Quantity		1 year from 1/1/27
322	"	"	"	Miniature Incandescent Lamps	Tung-Sol Lamp Works	ROSM	Quantity		1 year from 1/1/27
323	33	SSC	12/14/26	Blueprint & Brownprint Paper	The Huey Co.	ROSM			Extended to 12/31/27
324	"	"	"	Carbonising Compounds	H.F. Houghton & Co.	Portion			1 year from 1/1/27
325	"	"	"	Sal Soda GM 1802-M	Eaton Clark & Co.	Req.			1 year from 1/1/27
326	33	SSC	12/14/26	Caustic Soda GM 1806-M	Detroit Soda Products Co.	Req.			1 year from 1/1/27

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2019

Item No.	Mtg. No.	Committee (1)	Date of Action	Product Contracted	Supplier	Portion Of (2) Require	Kind Of (3) Discount	Participation	Term of Contract
327	33	SSC	12/14/26	Cyanide - Sodium Copper	Charles Hardy Inc.	Req.		Jaxon Optional	1 year from 1/1/27
					" " "	"			"
328	"	"	"	Cup Grease 0-2-2-1/2-3	American Oil Corp.	Req.		Bloomfield-Jamesville Tarrytown Optional	1 year from 1/1/27
329	"	"	"	Drills, Cutters, Reamers, etc.	Nat'l. Twist Drill Co.	75%			1 year from 1/1/27
					Gorham Tool Co.	25%			"
					Amer. Twist Drill Co.	25%			"
330	"	"	"	Fire Extinguishers, Engines & Recharges	Foamite-Childs Corp.	ROSM			1 year from 1/28/27
331	"	"	"	Calculating Machines	Monroe Calculating Machine Co.	ROSM			1 year from 1/1/27
332	"	"	"	Line-A-Time Devices	Line-A-Time Mfg. Co.	ROSM			1 year from 1/20/27
333	34	SSC	1/18/27	Duco Thinner	U. S. Industrial Alcohol Sales Co.	100% GS 75% Fisher			6 Mos. from 1/1/27
334	"	"	"	Any Items supplied	Russell Burdall & Ward Co.	ROSM	MP		1 year from 1/1/27
					Lamson & Sessions Co.	ROSM	MP		"
					The Kirk Latty Co.	"	MP		"
					Lake Erie Bolt & Nut Co.	"	MP		"
					Buffalo Bolt Co.	"	MP		"
335	"	"	"	Self Opening Die Heads, etc.	Eastern Machine Screw Co.	Quantity			1 year from 1/1/27
336	"	"	"	Special Reamers	Schallenbach Hunt Tool Co.	Quantity			1 year from 1/1/27
337	"	"	"	Drill Jig Bushings	Ex-Cell-O Tool & Mfg. Co.				Renewed 1 year from 3/1/27

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Item No.	Mtg. No.	Committee (1)	Date of Action	Product Contracted	Supplier	Portion Of Require (2)	Kind Of Discount (3)	Participation	Term of Contract
338	34	SSC	1/18/27	Dry Cells	National Carbon Co.				Renewed 1 year from 3/1/27
339	"	"	"	Flashlight Batteries & Cases	Burgess Battery Co.				Renewed 1 year from 3/1/27
340	"	"	"	Stellite	Haynes Stellite Co.				Renewed 1 year from 3/1/27
341	35	SSC	1/26/27	Trico Products	Trico Products Co.		Quantity		1 year from 1/11/27
342	36	SSC	2/8/27	Mimeograph Supplies	A.B. Dick Co.	ROSM			1 year from 2/15/27
343	"	"	"	Miniature Mazda Lamps	Mich. Lamp Div. of G.E.				Renewed 1 year from 4/1/27
344	37	SSC	3/15/27	Factory Trucks, Tractors, Trailers & Power Units	2 or more suppliers left to discretion of Master Mechanics Group	ROSM	Quantity		1 year
345	"	"	"	Meters	Reliance Elec. & Eng. Co.	ROSM			1 year from 3/15/27
346	"	"	"	Hobs, Gear Cutters, Reamers	Michigan Tool Co.	ROSM	Quantity		1 year from 3/15/27
347	"	"	"	Visible Card Recording Systems	Rand-Kardex Co.	ROSM	Quantity		1 year from 3/15/27
348	"	"	"	Calculating Machines	Marchant Calculating Machine Co.	ROSM	Quantity		1 year from 1/1/27
349	25	GPC	4/12/27	Aluminum	Alum. Co. of America	Req.	Quantity		1 year from 5/1/27
350	38	SSC	4/12/27	Gasoline Tank Caps	Easy-On Co.	ROSM			To 12/31/27

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Item No.	Mtg. No.	Committee (1)	Date of Action	Product Contracted	Supplier	Portion Of Requirements (2)	Kind Of Discount (3)	Participation	Term of Contract
351	38	SSC	4/12/27	Machine Tools & Equipment	Bullard Machine Tool Co.	ROSM			Renewed 1 year from 6/1/27
352	39	SSC	5/10/27	Fibre, Sheets, Tubes, Rods	Spaulding Fibre Co.			50% of A.C. Spark Plug 25% of Delco Remy Others Optional	1 year from 6/1/27
					Continental Fibre Co.			50% of Delco Remy Rods & Tubes 100% Ternstedt 25% Delco Remy Sheets 1/16" and plus Others Optional	1 year from 6/1/27
					National Vulcanized Fibre Co.			50% of A.C. Spark Plug 50% of Delco Remy sheets 1/16" & less 25% of Delco Remy sheets 1/16" & plus Others Optional	1 year from 6/1/27
353	"	"	"	Precision Gages	Pratt & Whitney Co.	ROSM Quantity			1 year from 5/1/27
354	"	"	"	Ground Thread Taps	John Bath & Co.	ROSM			1 year from 5/15/27
355	40	SSC	6/28/27	Thinner	E.I. du Pont de Nemours	60%			
356	"	"	"	Adjustable Thread Snap Gages	John-Sons Gage Works	ROSM Quantity			1 year from 7/1/27
357	"	"	"	Acetylene & Oxygen	Air Reduction Sales Co.	75%			1 year from 7/1/27
					Wall Brothers	25%			"
358	"	"	"	Metal Cleaner GM 2403-M	Industrial Chemical Co.	Req.			1 year from 7/1/27

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Item No.	Mtg. No.	Committee (1)	Date of Action	Product Contracted	Supplier	Portion Of Requirements (2)	Kind Of Discount (3)	Participation	Term of Contract
359	40	SSC	6/28/27	Metal & Painted Surface Cleaner - GM 2401-M 2404-M	H. A. Montgomery Co.	Req.			1 year from 7/1/27
360	"	"	"	Detergent GM 3406-M	Detroit Soda Products Co.	Req.			1 year from 7/1/27
361	"	"	"	Soda Ash	Detroit Soda Products Co.	Req.			1 year from 7/1/27
362	"	"	"	Quenching Machines	Gogan Mach. & Mfg. Co.	ROSM	Quantity		1 year from 7/1/27
363	41	SSC	8/9/27	Counterbores	Eclipse Interchangeable Counterbore Co.	ROSM	Quantity		1 year from 9/1/27
364	"	"	"	Cut Thread Taps	Threadwell Tool Co.	ROSM	Quantity		1 year from 9/1/27
365	"	"	"	Punch Presses	Hamilton Press Machinery Co. & V. & O. Press Co.	ROSM			1 year from 9/1/27
366	"	"	"	H.D. Shop, Road, and Inter-plant Trailers	Whitehead & Kales Co.	ROSM	Quantity		1 year from 9/1/27
367	"	"	"	Metal Cleaners	J. B. Ford Co.	ROSM			1 year from 9/1/27
368	"	"	"	Biscuits	National Biscuit Co.	ROSM			1 year from 9/1/27
369	"	"	"	Chairs	Du-More Chair Co.	ROSM			1 year from 9/1/27
370	"	"	"	Rear View Mirrors	Trico Products Co.	Req.	Quantity		7/1/27 to 6/30/28
371	"	"	"	Oil Tanks & Pumps	S. F. Bowser Co.	ROSM			Renewed
372	"	"	"	Motors & Control Equipment	Allis Chalmers Mfg. Co.	ROSM			Renewed
373	"	"	"	Transformers	General Electric Co.	ROSM			Renewed

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Item No.	Mtg. No.	Committee (1)	Date of Action	Product Contracted	Supplier	Portion Of Requirements (2)	Kind Of Discount (3)	Participation	Term of Contract
374	41	SSC	8/9/27	Scales	Toledo Scale Co.	ROSM			Renewed
375	"	"	"	Lockers, Steel	Lyon Metallic Mfg. Co.	ROSM			Renewed
376	"	"	"	Furniture, Safes, Files	Shaw-Walker Co.	ROSM			Renewed
377	"	"	"	Flow Meters	Republic Flow Meter Co.				Renewed
378	"	"	"	Fire Extinguishers	Pyrene Mfg. Co.	ROSM			Renewed
379	41	SSC	8/9/27	Machines & Tools	Potter & Johnson Machine Co.				Renewed
380	"	"	"	Chucks	E. Horton & Son Co.	ROSM			Renewed
381	"	"	"	Goggles & Head Masks	American Optical Co.	ROSM			Renewed
382	"	"	"	Steel Lockers, Racks, Shelving	Durand Steel Locker Co.	ROSM			Renewed
383	"	"	"	Mailing Machines & Supplies	Postage Meter Co.	ROSM			Renewed
384	42	SSC	9/30/27	Acetylene & Oxygen	Air Reduction Sales Co.				1 year from 9/1/27
385	"	"	"	Typewriters	Remington Rand Inc.	ROSM	M.P.		
				Accounting Machines	" " "	"	"		
				Line-A-Time	" " "	"	"		
				Adding Machines	" " "	"	"		
				Accounting Machine Cards	" " "	"	"		
				Binders	" " "	"	"		
				Sheets	" " "	"	"		
				Cabinets & Equipment	" " "	"	"		
				Fasteners	" " "	"	"		
				Wire	" " "	"	"		
386	43	SSC	10/11/27	Washers, Niagara	G. S. Blakeslee & Co.	ROSM	Quantity		1 year from 11/1/27

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Item No.	Mtg. No.	Committee (1)	Date of Action	Product Contracted	Supplier	Portion Of (2) Require.	Kind Of (3) Discount	Participation	Term of Contract
387	43	SSC	10/11/27	Trisodium Phosphate	Industrial Chemical Co.	Req.			1 year from 11/1/27
388	"	"	"	Wire Wheels	Wire Wheel Corp. of America	ROSM	Quantity		10 Mos. to 6/30/28
389	"	"	"	Any of 26 makes of Woodworking Machinery	J. Lee Hackett	ROSM	M.P.		1 year from 11/1/27
390	"	"	"	Car Locks	Briggs & Stratton Corp.	Req.	Quantity		9 Mos. to 6/30/28
391	"	"	"	Any of Sellers Products	Witherow Steel Corp.	ROSM	M.P.		9 Mos. to 6/30/28
392	48	SSC	10/11/27	Oil Soap GM-2252-M	Sanitary Supplies Inc.				1 year from 1/1/28
393	"	"	"	Motors	Wagner Electric Corp.	ROSM			1 year from 1/1/28
					Howell Elec. Motor Corp.	ROSM			"
394	"	"	"	Motors & Control Equipment	Westinghouse Elec. & Mfg. Co.	ROSM			1 year from 1/1/28
395	"	"	"	Cutters, Hobs, Reamers, etc.	Illinois Tool Works	ROSM	Quantity		1 year from 1/1/28
					Michigan Tool Co.	"			"
396	"	"	"	H. S. Steel Hobs	Barber-Colman Co.	ROSM			1 year from 1/1/28
397	"	"	"	Milling Cutters	Goddard & Goddard Co.	ROSM			1 year from 1/1/28
398	"	"	"	Motors, Control Equipment & Repair Parts	Crocker-Wheeler Co.	ROSM			1 year from 1/1/28
399	"	"	"	Calculating Machines	Monroe Calculating Machine Co.	ROSM			1 year from 1/1/28
400	"	"	"	Packings	Garlock Packing Co.	ROSM			1 year from 1/1/28
					Anchor Packing Co.	"			"
401	"	"	"	Self Opening Die Heads, etc.	Eastern Machine Screw Co.	ROSM			1 year from 1/1/28

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Item No.	Mtg. No.	Committee (1)	Date of Action	Product Contracted	Supplier	Portion Of Require (2)	Kind Of Discount (3)	Participation	Term of Contract
402	43	SSC	10/11/27	All Seller's products	Easy-On Cap Company		M.P.		1 year from 1/1/28
403	"	"	"	White Lead in Oil - Dry White Lead	National Lead Co.				1 year from 1/1/28
404	44	SSC	11/8/27	Cable, Kerite	Kerite Ins. Wire & Cable Co.	ROSM			1 year from 1/1/28
405	"	"	"	Ball Bearings	Nice Ball Bearing Co.	ROSM	Quantity		1 year from 1/1/28
406	"	"	"	Cap & Set Screws - Milled	Automatic Products Co.		Quantity		1 year from 1/1/28
407	44	SSC	11/8/27	Friction Tape	Dryden Rubber Co.	80%	Quantity		1 year from 1/1/28
408	"	"	"	Any Products	Reliance Mfg. Co.		M.P.		6 Mos. from 1/1/28
409	"	"	"	Carburizing Compound	Steel Treating Equipment Co.				1 year from 1/1/28
410	"	"	"	Cyanide - Copper, Sodium	Charles Hardy, Inc.	Req.			1 year from 1/1/28
411	"	"	"	Caustic Soda GM-1806-M	Detroit Soda Products Co.	Req.			1 year from 1/1/28
412	"	"	"	Motor Valves	Thompson Products, Inc.	60%		Chevrolet Excluded	1 year from 1/1/28
413	45	SSC	12/8/27	Abrasive Paper & Cloth-coated	American Glue Co.	ROSM			1 year from 1/1/28
					Armour Sand Paper Works	"			"
					Baeder Adamson Co.	"			"
					Herman Behr & Co., Inc.	"			"
					H. H. Barton & Son Co.	"			"
					Carborundum Co.	"			"
					Manning Abrasive Co.	"			"
					Minn. Mining & Mfg. Co.	"			"
					U. S. Sand Paper Co.	"			"

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Item No.	Mtg. No.	Committee (1)	Date of Action	Product Contracted	Supplier	Portion Of (2) Require	Kind Of (3) Discount	Participation	Term of Contract
414	45	SSC	12/8/27	Sal Soda	Detroit Soda Products Co.	Req.			1 year from 1/1/28
415	"	"	"	Fire Extinguishers	Foamite-Childs Corp.	ROSM			1 year from 1/28/28
416	"	"	"	Miniature Incandescent Lamps	Tung-Sol Lamp Works	Req.		Car & Truck	1 year from 1/31/28
417	46	SSC	1/17/28	Pyroxylin Finishes, Duco & Duco Thinner	E. I. du Pont de Nemours	ROSM	Quantity		1 year from 1/1/28
418	"	"	"	Primers & Surfacegs	E. I. du Pont de Nemours	ROSM	Quantity		1 year from 1/1/28
419	"	"	"	Cup Grease G-2-2-1/2-3	Fiske Bros. Refining Co.	Req.			1 year from 1/1/28
420	46	SSC	1/17/28	Dry Cells-Flashlight Batt.	Bright Star Battery Co.	Req.			1 year from 1/1/28
421	"	"	"	Electric Drills, Tools, Grinders and Accessories	Black & Decker Mfg. Co. Chicago Pneumatic Tool Co.	ROSM "	 Quantity		1 year from 1/1/28 "
422	47	SSC	2/14/28	Dial Indicators	Federal Products Corp.	ROSM	Quantity		1 year from 3/1/28
423	"	"	"	Mimeograph Supplies	A. B. Dick Co.	ROSM			1 year from 2/15/28
424	"	"	"	Hose Clamps	Federal Tin Co.	ROSM	Quantity		1 year from 1/1/28
425	"	"	"	Drill Jig Bushings	Ex-Cell-O Tool & Mfg. Co.	ROSM	Quantity		1 year from 3/1/28
426	"	"	"	Stellite	Haynes Stellite Co.				1 year from 3/1/28
427	"	"	"	Drills	Nat'l. Twist Drill Co. Union Twist Drill Co.	ROSM ROSM			1 year from 1/1/28 "
428	48	SSC	3/13/28	Floor & Running Board Molding	Joseph N. Smith Co.	ROSM	Quantity		1 year from 1/1/28

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Item No.	Mtg. No.	Committee (1)	Date of Action	Product Contracted	Supplier	Portion Of Requirements (2)	Kind Of Discount (3)	Participation	Term of Contract
429	48	SSC	3/13/28	Electric Industrial Trucks & Tractors	Automatic Transportation Inc.	ROSM	Quantity		1 year from 3/15/28
					Elwell-Parker Elec. Co.	"	Quantity		"
430	"	"	"	Gas Electric - Industrial Truck Power Plants	Ready Power Co.	ROSM	Quantity		1 year from 3/15/28
431	"	"	"	Electrolytic Manufacturing Sets	Chandeysson Electric Co.	ROSM			1 year from 4/2/28
432	"	"	"	Motors	Reliance Elec. & Eng. Co.	ROSM	Quantity		1 year from 3/15/28
433	"	"	"	Aluminum	Alum. Co. of America	Req.			1 year from 4/30/28
434	48	SSC	3/13/28	Gage Blocks	Pratt & Whitney.	ROSM			1 year from 5/1/28
435	"	"	"	Machine Tools & Equipment	Bullard Machine Tool Co.	ROSM			1 year from 6/1/28
436	29	GPC	3/28/28	Lubricating Fittings	Bassick Manufacturing Co.	Req.	Quantity		1 year from 6/30/28
437	49	SSC	4/11/28	Storage Batteries	Electric Storage Battery Co.	75%			7/1/28 to 12/31/28
					& Willard Storage Battery Co.	"			
						17-1/2%			Years 1929-1930
438	"	"	"	Miniature Mazda Lamps	Westinghouse Elec. & Mfg. Co.	Req.			1 year from 5/1/28
439	"	"	"	Transcribers	Error-No. Inc.	ROSM			1 year from 6/30/28
440	"	"	"	Cutting Machines	Universal Cutter Co.	ROSM			1 year from 6/30/28
					Eastman Machine Co.	"			"
441	"	"	"	Adjustable Snap Gages Etc.	John-Sons Gage Works	ROSM	Quantity		1 year from 6/30/28
442	"	"	"	Locks & Parts	Briggs & Stratton Corp.	ROSM	Quantity		1 year from 6/30/28

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Item No.	Mtg. No.	Committee (1)	Date of Action	Product Contracted	Supplier	Portion Of (2) Require.	Kind Of (3) Discount	Participation	Term of Contract
443	49	SSC	4/11/28	Lockwashers	Reliance Mfg. Co. & Mansfield Lockwasher Co.	ROSM	Quantity		1 year from 6/30/28
444	"	"	"	White Lead in Oil - Dry White Lead	National Lead Co.	Req.			6 Mos. from 6/30/28
445	"	"	"	Electric Controlling Devices	Cutler Hammer Mfg. Co.	ROSM			1 year from 6/30/28
446	50	SSC	4/17/28	Heat Treating Machines	Cogan Machine Co.	ROSM	Quantity		1 year from 6/1/28
447	"	"	"	Blueprint & Brownprint Paper	The Huey Co.	ROSM			1 year from 5/1/28
448	"	"	"	Ground Thread Taps	Pratt & Whitney Co.	50%	Quantity		1 year from 5/1/28
449	51	SSC	5/8/28	Frames	A. O. Smith Corp.				
450	"	"	"	Pig Iron	Hanna Furnace Co.	80% plus			
451	52	SSC	6/12/28	Acetylene & Oxygen					1 year from 5/1/28
452	"	"	"	Carbon Paper, Typewriter Ribbons	M. B. Cook Co.	ROSM	Quantity		1 year from 6/1/28
453	"	"	"	Printing	Ainger Printing Co.	Portion			1 year from 6/1/28
454	"	"	"	Copper Buffing Compound					
455	"	"	"	Emery Cake					
456	"	"	"	Grease Stick GM-1610-M	Lustre Co.				1 year from 7/1/28
457	"	"	"	Industrial Trailers	Mercury Mfg. Co.	ROSM	Quantity		1 year from 3/16/28
458	"	"	"	Shelving, Steel	General Fire Proofing Co.	ROSM			1 year from 7/1/28

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Item No.	Mtg No.	Committee (1)	Date of Action	Product Contracted	Supplier	Portion Of Requirements (2)	Kind Of Discount (3)	Participation	Term of Contract
459	52	SSC	6/12/28	Auto. Locks & Parts	Briggs & Stratton Corp.	ROSM	Quantity		1 year from 7/1/28
460	"	"	"	Wire Wheels	Wire Wheel Corp. of America	ROSM	Quantity		1 year from 7/1/28
461	"	"	"	58% Soda Ash & Fluffy	Solvay Sales Corp.	80%			1 year from 7/1/28
462	"	"	"	Transformers	General Electric Co.	ROSM			Renewed
463	"	"	"	Metal Cleaner	J. B. Ford Co.				Renewed
464	"	"	"	Trailers	Whitehead & Kales	ROSM			Renewed
465	"	"	"	Cut Thread Taps	Threadwell Tool Co.	ROSM			Renewed
466	52	SSC	6/12/28	Scales	Toledo Scale Co.	ROSM			Renewed
467	"	"	"	Flow Meters	Republic Flow Meter Co.				Renewed
468	53	SSC	7/10/28	Aluminum File Guides	Alum. Co. of America	ROSM			1 year from 7/1/28
469	"	"	"	Tripoli	H. A. Montgomery Co.	Req.			1 year from 7/1/28
470	"	"	"	Motors	General Electric Co.	ROSM			1 year from 7/1/28
471	"	"	"	Oil Tanks & Pumps	S. F. Bowser & Co.	ROSM			1 year from 8/10/28
472	"	"	"	Large Incandescent Lamps	Mich. Lamp Division	Req.			1 year from 9/1/28
473	"	"	"	Cleaners	H. A. Montgomery Co.	Req.			1 year from 7/1/28
474	"	"	"	Metal & Painted Surface Cleaner, etc.	Bruce Products Co.	Req.			1 year from 7/1/28
475	"	"	"	Shafts, Levers, "I" Beams, etc.	Witherow Steel Corp.	ROSM	Quantity		1 year from 7/1/28

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Item No.	Mtg. No.	Committee (1)	Date of Action	Product Contracted	Supplier	Portion Of Requirements (2)	Kind Of Discount (3)	Participation	Term of Contract
476	54	SSC	8/15/28	Plating Generators & Motor Generator Sets	Chandeysson Electric Co.	ROSM	Quantity		1 year from 8/1/28
477	"	"	"	Biscuits	National Biscuit Co.	ROSM			1 year from 9/1/28
478	"	"	"	Salvaging Old Leather Belts	J. Manville Co.				6 Mos. from 9/1/28
479	"	"	"	Punch Press Machinery & Equipment	Hamilton Press & Machinery Co. & V. & O. Press	ROSM	Quantity		1 year from 9/1/28
480	"	"	"	Oil Soap GM-2252-M	Phoenix Oil Co.	Req.			1 year from 9/1/28
481	54	SSC	8/15/28	Mailing Machines	Postage Meter Co.				Renewed
482	"	"	"	Washing Machines, etc.	G. S. Blakeslee & Co.				Renewed
483	"	"	"	Machine Tools	Potter & Johnston Mach. Co.				Renewed
484	"	"	"	Goggles & Head Masks	American Optical Co.				Renewed
485	55	SSC	9/13/28	Office Furniture - Filing Equipment - Supplies - Systems	Shaw-Walker Co.	ROSM	MP		1 year from 10/1/28
486	"	"	"	Health Chairs	Do/More Chair Co.	ROSM			1 year from 9/1/28
487	"	"	"	Safes	Meilink Steel Safe Co.	ROSM			1 year from 10/1/28
488	56	SSC	10/9/28	"Sabeco" Bearing Metal	Fredericksen Co.	Req.	Quantity		1 year from 11/1/28
489	"	"	"	Trisodium Phosphate	Industrial Chemical Co.	Req.			1 year from 11/1/28
490	"	"	"	Counterbores	Eclipse Interchangeable Counterbore Co.	ROSM	Quantity		1 year from 11/1/28

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6859

2061

Item No.	Mtg. No.	Committee (1)	Date of Action	Product Contracted	Supplier	Portion Of Require. (2)	Kind Of Discount (3)	Participation	Term of Contract
491	56	SSC	10/9/28	Cap & Set Screws	Automatic Products Co.				Renew from 1/1/29 for 1 year
492	"	"	"	Abrasive Paper, Etc.	American Glue Co.	ROSM			Renew 1 year from 1/1/29
					Armour & Co.	"			"
					Baeder Adamson Co.	"			"
					H. H. Barton & Son Co.	"			"
					Behr-Manning Corp.	"			"
					Carborundum Co.	"			"
					Minn. Mining & Mfg. Co.	"			"
					U. S. Sand Paper Co.	"			"
493	"	"	"	Ball Bearings	Nice Ball Bearing Co.				Renew 1 year from 1/1/29
494	55	SSC	10/9/28	Hobs, Cutters, Reamers, etc.	Michigan Tool Co.	ROSM			Renew 1 year from 1/1/29
					Illinois Tool Co.	"			"
495	"	"	"	Milling Cutters	Goddard & Goddard Co.	ROSM			Renew 1 year from 1/1/29
496	"	"	"	Die Heads, etc.	Eastern Mach. Screw Corp.	ROSM			Renew 1 year from 1/1/29
497	"	"	"	Ignition Cable	Kerite Insulated Wire Co.	ROSM			Renew 1 year from 1/1/29
498	"	"	"	Calculators	Monroe Calculating Machine Co.	ROSM			Renew 1 year from 1/1/29
499	"	"	"	Packings	Anchor Packing Co.	ROSM			Renew 1 year from 1/1/29
					Garlock Packing Co.	"			"
500	"	"	"	H. S. Steel Hobs	Barber-Colman Co.	ROSM			Renew 1 year from 1/1/29
501	"	"	"	Heavy Duty Grinders	Marschke Mfg. Co.	ROSM			Renew 1 year from 1/1/29
502	"	"	"	Molding-Running Board & Floor Board	Joseph M. Smith Co.				Renew 1 year from 1/1/29

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6987

20682

Item No.	Mtg. No.	Committee (1)	Date of Action	Product Contracted	Supplier	Portion Of Requirements (2)	Kind Of Discount (3)	Participation	Term of Contract
503	56	SSC	10/9/28	White Lead in Oil - Dry White Lead	National Lead Co.				Renew 1 year from 1/1/29
504	"	"	"	Everything manufactured by Suppliers	Reliance Mfg. Co. and Mansfield Lockmaker Co.	ROSM	MP MP		Renew 1 year from 1/1/29
505	57	SSC	11/13/28	Furniture, Steel	Shaw-Walker Co.	ROSM			1 year
506	"	"	"	Outdoor Lithographed Posters & Offset Lithography	Edwards & Deutsch Lithography Co.	Req.			From 1/1/29
507	"	"	"	Fire Extinguishers	Amer.-LaFrance & Foamite Co.	ROSM			Renew for 1 year from Expiration
508	57	SSC	11/13/28	Mimeograph Supplies	A. B. Dick Co.	ROSM			Renew for 1 yr. from Expiration
509	"	"	11/13/28	Drill Jig Bushings	Ex-Cell-O Tool & Mfg. Co.	ROSM			Renew for 1 yr. from Expiration
510	"	"	"	Stellite	Haynes Stellite Co.				Renew for 1 yr. from Expiration
511	"	"	"	Portable Electric Tools	Chicago Pneumatic Tool Co.				Renew for 1 yr. from Expiration
512	58	SSC	12/11/28	Caustic Soda,	Detroit Soda Products Co.				Renewed
513	"	"	"	Cup Grease 0-2-2-1/2-3	American Oil Co.				1 year from 1/13/29
514	"	"	"	Hose Clamps	Federal Tin Co.	ROSM	Quantity		1 year
515	"	"	"	Carburizing Compounds	Steel Treating Equipment Co.				1 year from 1/1/29

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1937

20693

Item No.	Mtg. No.	Committee (1)	Date of Action	Product Contracted	Supplier	Portion Of Require (2)	Kind Of Discount (3)	Participation	Term of Contract
516	58	SSC	12/11/28	Cyanide-Sodium-Copper	Charles Hardy, Inc.	Req.			1 year from 1/1/29
517	"	"	"	Transmission Lubricants	Henry H. Cross Co.	ROSM			1 year
518	"	"	"	Pyroxylin Finishes	E. I. du Pont de Nemours	ROSM	Quantity		1 year from 1/1/29
519	"	"	"	Gas. Electric Industrial Truck Power Plants	Ready Power Co.	ROSM			1 year from Expiration
520	"	"	"	Trucks & Tractors	Elwell Parker Electric Co.	ROSM			1 year from Expiration
521	"	"	"	Elec. Ind. Trucks & Tractors	Automatic Transportation Co.	ROSM			1 year from Expiration
522	"	"	"	Trucks, Tractors & Trailers	Mercury Mfg. Co.	ROSM			1 year from Expiration
523	59	SSC	1/15/29	Drills & Reamers	Amer. Twist Drill Co.	ROSM			1 year
					Natl. Twist Drill Co.	"			"
524	"	"		Miniature Mazda Lamps	Westinghouse Lamp Co.				1 year from Expiration
525	"	"	"	Blueprint & Brownprint Paper	The Huey Co.	ROSM			1 year from Expiration
526	"	"	"	Ground Thread Taps	Pratt & Whitney Co.	ROSM			1 year from Expiration
527	"	"	"	Oxygen & Acetylene	Air Reduction Sales Co.				1 year from Expiration
528	"	"	"	Aluminum	Alum. Co. of America				1 year from Expiration
529	60	SSC	2/12/29	Tanks	Youngstown Boiler & Tank Co.	ROSM			1 year.
530	"	"	"	Pencils & Erasers	Joseph Dixon Crucible Co.	ROSM			1 year
531	"	"	"	Pens & Penholders	Eagle Pencil Co.	ROSM			1 year

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42

27063

5582

Item No.	Mtg. No.	Committee (1)	Date of Action	Product Contracted	Supplier	Portion Of (2) Require	Kind Of(3) Discount	Participation	Term of Contract
532	61	SSC	3/21/29	Pencils, Leads, Erasers & Crayons	Gregory Mayer & Thos	ROSM			1 year
533	"	"	"	LubricatingFittings	Bassick Mfg. Co.				Renewed for 1 year
534	"	"	"	Cutting Machines	Universal Cutter Co.	ROSM			Renewed for 1 year
					Eastman Machine Co.	"			" " " "
535	"	"	"	Oil Tanks & Pumps	S. F. Bowser Co.	ROSM			Renewed for 1 year
536	"	"	"	Locks & Parts	Briggs & Stratton	ROSM			Renewed for 1 year
537	"	"	"	Axle Shafts, etc.	Witherow Steel Corp.	ROSM			Renewed for 1 year
538	"	"	"	White Lead in Oil	National Lead Co.				Renewed for 1 year
539	"	"	"	Metal Cleaner	J. B. Ford Co.				Renewed for 1 year
540	62	SSC	4/11/29	Heating & Ventilating Equipment	York Heating & Ventilating Co.	ROSM			1 year
541	62	"	"	Woodworking Machinery	Baxter D. Whitney & Son	ROSM			1 year
542	"	"	"	Parkerising Compound	Parker Rust Proof Co.	ROSM			1 year
543	63	SSC	5/7/29	Chromic Acid GM-1816M	H. A. Montgomery Co.				1 year
544	"	"	"	Trailers	Mercury Mfg. Co.	ROSM			Renewed for 1 year
545	"	"	"	Aluminum	Aluminum Co. of America	ROSM			Renewed for 1 year
546	64	SSC	6/11/29	Copper Buffing Compound	E. B. Stevens Co.	Req.			1 year from 7/1/29
547	"	"	"	Emery Cake #180	Bruce Products Co.	Req.			1 year from 7/1/29

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9853

2065

Item No.	Mtg. No.	Committee (1)	Date of Action	Product Contracted	Supplier	Portion Of(2) Require.	Kind Of(3) Discount	Participation	Term of Contract
548	64	SSC	6/11/29	Grease Stick GM-1610-M	H. A. Montgomery Co.	Req.			1 year from 7/1/29
549	"	"	"	Nickel Buffing Compound	Bruce Products Co.	Req.			1 year from 7/1/29
550	"	"	"	Shelving, Steel	General Fireproofing Co.	ROSM			1 year from 7/1/29
					Lyon Metal Products Co.	ROSM			" " " "
551	"	"	"	Misc. Stationery Supplies	Baecher Pack & Lewis-Zone 1	Req.			6 mos. from 7/1/29
					Gregory Mayer & Thom-Zone 2-3	"			" " " "
					Tower Bros. Stat. Co.-Zone 4	"			" " " "
552	"	"	"	Aluminum Bronze Powder	Alum. Co of America	ROSM			1 year.
553	"	"	"	Aluminum Spar Mixing Liquid	Sherwin-Williams Co.	ROSM			1 year
554	"	"	"	Electrolytic Cleaner	J. R. Ford Sales Co.	Req.			1 year from 7/1/29
555	"	"	"	Nichrome Carburizing Containers & Parts in Sheet or cast Forms	Driver-Harris Co.	ROSM			7 mos. from 6/1/29
556	"	"	"	Transcribers	Error-No Co.	ROSM			1 year from 7/1/29
557	"	"	"	Dry White Lead-White Lead in Oil	National Lead Co.	Req.			6 mos. from 7/1/29
558	"	"	"	Soda Ash	Detroit Soda Products Co.	Req.			1 year from 7/1/29
559	"	"	"	Machinery & Equipment	Hooven Owens Co.	ROSM			Renewed
					Toledo Machine & Tool Co.	"			"
560	"	"	"	Taps & Dies	Threadwell Tool Co.	ROSM			Renewed
561	"	"	"	Trailers	Whitehead & Kales Co.	ROSM			Renewed

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3902

1587

Item No.	Mtg. No.	Committee (1)	Date of Action	Product Contracted	Supplier	Portion Of(2) Require.	Kind Of(3) Discount	Participation	Term of Contract
562	64	SSC	6/11/29	Scales	Toledo Seale Co.	ROSM			Renewed
563	"	"	"	Biscuits	National Biscuit Co.				Renewed
564	"	"	"	Health Chairs	Do/More Chair Co.	ROSM			Renewed
565	"	"	"	Counterbores	Eclipse Interchangeable Counterbore Co.	ROSM			Renewed
566	65	SSC	7/23/29	Locks & Parts	Briggs & Stratton	ROSM	Quantity		1 year from 7/1/29
567	"	"	"	Shafts, Beams, Levers, etc.	Witherow Steel Corp.	ROSM	MP		1 year from 7/1/29
568	"	"	"	Any Products of Gilmer Co.	L. H. Gilmer Co.	ROSM	MP		1 year
569	"	"	"	Cleaners-GM 2401-M-2404M 2408-M	Blackson Chem. Co.	Req.			1 year
570	"	"	"	Cleaner & Cleanser	Bruce Products Co.	Req.			1 year
571	"	"	"	Chrome Buffing Compound Tripoli, Copper Buffing Compound	E.Read Burns & Sons	Req.			1 year
572	"	"	"	Plating Generators, etc.	Chandeysson Electric Co.				Renewed for 1 year
573	"	"	"	Large Mazda Lamps	Michigan Lamp Div.				Renewed for 1 year
574	66	"	8/13/29	Oil Soap GM 2252-M	Phoenix Oil Co.	Req.			1 year from 9/1/29
575	"	"	"	Soda Ash-GM-1801-M-1803-M	Detroit Soda Products Co.	Req.			To 12/31/29
576	"	"	"	Tubing	Bundy Tubing Co.	ROSM			1 year

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5985

7067

Item No.	Mtg. No.	Committee (1)	Date of Action	Product Contracted	Supplier	Portion Of (2) Require.	Kind Of (3) Discount	Participation	Term of Contract
577	66	ASC	8/13/29	Transformers	General Electric Co.	ROSM			Renewed for 1 year
578	"	"	"	Bearing Metal-Production Parts	Frederickson Co.	ROSM			Renewed for 1 year
579	67	"	9/10/29	Electrotypes	Mich. Electrotype & Stereotype Co.				Renewed for 1 year
580	"	"	"	Photo Engraving	Wayne Color Plate Co.				Renewed for 1 year
581	"	"	"	Ignition Cable	Kerite Ins. Wire & Cable Co.				Renewed for 1 year
582	"	"	"	Moldings	Jos. H. Smith Co.				Renewed for 1 year
583	"	"	"	Cap Screws	Automatic Products Co.	ROSM			Renewed for 1 year
584	"	"	"	Calculators & Defiance Machines	Monroe Calculating Machine Co.	ROSM			Renewed for 1 year
585	"	"	"	Die Heads, etc.	Eastern Mach. Screw Corp.	ROSM			Renewed for 1 year
586	"	"	"	Abrasives	American Glue Co.	ROSM			Renewed for 1 year
					Armour & Co.	"			" " " "
					Bender-Adamson Co.	"			" " " "
					Behr-Manning Corp.	"			" " " "
					H. H. Barton & Son Co.	"			" " " "
					Minn. Mining & Mfg. Co.	"			" " " "
					Carborundum Co.	"			" " " "
					U. S. Sand Paper Co.	"			" " " "
587	"	"	"	Heavy Duty Grinders	Marschke Mfg. Co.	"			" " " "

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Item No.	Mtg. No.	Committee (1)	Date of Action	Product Contracted	Supplier	Portion Of Require (2)	Kind Of Discount (3)	Participation	Term of Contract
588	67	SSC	9/10/29	Milling Cutters	Goddard & Goddard Co.	ROSM			Renewed for 1 year
589	"	"	"	Pyroxylin Finishes	E. I. du Pont de Nemours	ROSM			" " "
590	"	"	"	Ball Bearings	Nice Ball Bearing Co.				" " "
591	"	"	"	Hobs, etc.	Barber-Colman Co.	ROSM			" " "
					Michigan Tool Co.	"			" " "
592	"	"	"	Reamers, Cutters, etc.	Illinois Tool Works	ROSM			" " "
593	"	"	"	Packings	Garlock Packing Co.	ROSM			" " "
					Anchor Packing Co.	"			" " "
594	"	"	"	Drill Jig Bushings	Ex-Cell-O Tool & Mfg. Co.	ROSM			" " "
595	"	"	"	Parco Powder	Parker Rust Proof Co.				" " "
596	"	"	"	White Lead	National Lead Co.				" " "
597	"	"	"	Sundstrand Machines	General Office Equip. Co.				" " "
598	68	"	10/15/29	Trisodium Phosphate	Detroit Soda Products Co.				1 year from 11/1/29
599	"	"	"	Electrical Tools	U. S. Electrical Tool Co.	ROSM			1 year
600	"	"	"	Shop & Road Trailers	Whitehead & Kales Co.	ROSM			1 year from 10/1/29
601	"	"	"	Electric Controlling Devices	Cutler Hammer Co.	ROSM			Renewed for 1 year
602	"	"	"	Fire Extinguishers	Amer. La France & Foamite Ind.	ROSM			" " "
603	69	"	11/13/29	Transmission Lubricants	Henry H. Cross Co.	Req.			1 year from 12/1/29

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6985

6902

Item No.	Mtg. No.	Committee (1)	Date of Action	Product Contracted	Supplier	Portion Of (2) Require	Kind Of (3) Discount	Participation	Term of Contract
604	69	SSC	11/13/29	Parts Washing Machines	Blakeslee & Co.	ROSM			1 year from 11/1/29
605	"	"	"	Renewable Fuses	Jefferson Electric Co.	ROSM			1 year from 12/1/29
606	"	"	"		John-Sons Gage Works	ROSM			
607	"	"	"	Stellite	Haynes Stellite Co.				Renewed for 1 year
608	"	"	"	Pens & Penholders	Eagle Pencil Co.	ROSM			Renewed for 1 year
609	"	"	"	Mimeograph Supplies	A . B.Dick Co.	ROSM			Renewed for 1 year
610	70	"	12/12/29	Cup Grease 0-1-2-3-5	Swan-Finish Oil Corp.	Req.			1 year from 1/1/30
611	"	"	"	Socket Wrenches	Snap-On Wrench Co.	ROSM			1 year from 1/1/30
612	"	"	"	Cyanide-Sodium	Charles Hardy, Inc.	Req.			1 year from 1/1/30
613	"	"	"	Milling Cutters	Goddard & Goddard Co.	ROSM			1 year from 1/1/30
614	"	"	"	Gas, Electric Truck Power Plants	Ready Power Co.	ROSM			Renewed
615	"	"	"	Electric Truck & Tractors	Automatic Transportation Co. Elwell-Parker Co.	ROSM "			Renewed "
616	71	"	1/14/30	Files	Heller Bros.	ROSM			1 year
617	"	"	"	H. S. Twist Drills & Reamers	Amer. Twist Drill Co. Nat'l. Twist Drill Co.	ROSM "			1 year " "
618	"	"	"	Caustic Soda GM-1806M	Dow Chemical Co.	Req.			1 year

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8987

Item No.	Mtg. No.	Committed(1)	Date of Action	Product Contracted	Supplier	Portion Of Require(2)	Kind Of Discount(3)	Participation	Term of Contract
619	71	SSC	1/14/30	Abrasive Paper & Cloth	Carborundum Co.	ROSM			1 year
					Behr Manning Corp.	ROSM			" "
					Minn. Mining & Mfg. Co.	"			" "
620	"	"	"	Carburizing Compounds	Steel Treating Equip. Co.	Req.			1 year
621	"	"	"	Factory Towels	Oakleaf Mills	ROSM			1 year
622	"	"	"	Pencils, Erasers, Crayons, etc.	Gregory-Mayer-Thom Co.				Renewed for 1 year
623	"	"	"	Remington-Rand Products	Remington-Rand Business Service Inc.	ROSM	MP		Renewed for 1 year
624	"	"	"	Woodworking Machinery	Baxter D. Whitney & Son	ROSM			Renewed for 1 year
625	72	SSC	2/4/30	58% Soda Ash & Fluffy	Detroit Soda Products Co.	Req.			1 year
626	"	"	"	Trailers & Hand Trucks	Mercury Mfg. Co.	ROSM			Renewed for 1 year
627	"	"	"	Miniature Lamps	Westinghouse Lamp Co.				Renewed for 1 year
628	"	"	"	Acetylene & Oxygen	Air Reduction Sales Co.				Renewed for 1 year
629	"	"	"	Heaters	York Heating & Ventilating Co.	ROSM			Renewed for 1 year
630	"	"	"	Aluminum	Alum. Co. of America				Renewed for 1 year
631	73	SSC	3/13/30	Abrasive Paper & Cloth	Armour & Co.	ROSM			1 year
632	"	"	"	Milling Cutters, Hobs, Tools	Nat'l. Twist Drill Co.	ROSM	Quantity		1 year
633	"	"	"	Trucks	Elwell-Parker Co.	RCSM			1 year
634	74	"	4/8/30	Blueprint & Brownprint Papers	The Huey Co.	ROSM			1 year from 5/30

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6987

2071

Item No.	Mtg. No.	Committee (1)	Date of Action	Product Contracted	Supplier	Portion of (2) Require.	Kind of (3) Discount	Participation	Term of Contract
635	74	SSC	4/8/30	Truck Power Plants	Ready Power Co.	ROSM			1 year
636	"	"	"	Cutting Machines	Eastman Machine Co.	ROSM			Renewed for 1 year
					J. B. Oury Mfg. Co.	"			"
637	"	"	"	Oil Tank & Pumps	S. F. Bowser & Co.	ROSM			Renewed for 1 year
638	"	"	"	White Lead	National Lead Co.	Req.			Renewed for 1 year
639	"	"	"	Heating & Ventilating Equipment	York Heating and Ventilating Co.	ROSM			1 year from 5/30
640	75	SSC	5/13/30	Chromic Acid - GM-1816-M	Mutual Chemical Co.	Req.			1 year from 5/15/30
641	"	"	"	Tying Wire	Gurard Co.	ROSM			1 year
642	"	"	"	Striping & Blackoff Brushes	Gem Striper Co.	ROSM			1 year
643	"	"	"	Health Chairs	Do/More Chair Co.	ROSM			Renewed for 1 year
644	"	"	"	Scales	Toledo Scale Co.	ROSM			Renewed for 1 year
645	"	"	"	Biscuits, Crackers, etc.	National Biscuit Co.				Renewed for 1 year
646	"	"	"	Tubing	Bundy Tubing Co.	ROSM			Renewed for 1 year
647	75	SSC	5/13/30	Sales Managers Picture Service	Jam Handy Picture Service				Renewed for 1 year
648	76	SSC	6/18/30	Anti-Freeze Methanol	Western Rosin & Turpentine Co.	ROSM			9/1/30 to 4/1/31
649	"	"	"	Locks & Parts	Briggs & Stratton	ROSM	Quantity		1 year from 7/1/30
650	"	"	"	Pig Iron	Hanna Furnace Corp.	65%			1 year from 1/1/31
					Pickands - Mather Co.	35%			"

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2702

Item No.	Mtg. No.	Committee (1)	Date of Action	Product Contracted	Supplier	Portion Of(2) Require	Kind Of(3) Discount	Participation	Term of Contract
651	76	SSC	6/18/30	Metal Cleaner GM-2401-M	Blackson Chemical Co.	Req.			1 year from 7/1/30
652	"	"	"	Rosin Metal Cleaner GM-2403-M	Detroit Soda Products Co.	Req.			1 year from 7/1/30
653	"	"	"	Platers Cleaner for Electrolytic Cleaning GM-2410M	J. B. Ford Co.	Req.			1 year from 7/1/30
654	"	"	"	Fittings	Alemite Co.		Quantity		1 year from 7/1/30
655	"	"	"	Rolls	Ditto Co.	Req.			1 year
656	77	SSC	8/12/30	Transformers	General Electric Co.	ROSM			1 year
657	"	"	"	Oil Soap-40% GM-2252-M	Swan-Finch Corp.				1 year from 9/1/30
658	"	"	"	Large Lamps	Westinghouse Lamp Co.				Renewed for 1 year
659	"	"	"	Washing Machines	G. S. Blakeslee Co.				Renewed for 1 year
660	78	SSC	9/16/30	Office Furniture - Wood & Steel	Shaw Walker Co.	ROSM			1 year from 10/1/30
661	"	"	"	Batteries	Delco-Remy	Req.		Chev. Buffalo Tarrytown-Bloomfield & Oakland Excluded	1 year from 1/1/31
662	79	SSC	10/21/30	Trisodium Phosphate	Industrial Chemical Co.	Req.			1 year
663	"	"	"	Oxygen & Acetylene Welding Equipment	Air Reduction Sales Co.	ROSM			1 year

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2873

4871

Item No.	Mtg. No.	Committee(1)	Date of Action	Product Contracted	Supplier	Portion Of(2) Require.	Kind Of(3) Discount	Participation	Term of Contract
664	79	SSC	10/21/30	Ball Bearings	Nice Ball Bearing Co.				Renewed for 1 year
665	"	"	"	Calculators	Monroe Calculator Co.	ROSM			Renewed for 1 year
666	"	"	"	Die Heads	Eastern Mach. Screw Corp.	ROSM			Renewed for 1 year
667	"	"	"	Packings	Anchor Packing Co.	ROSM			Renewed for 1 year
					Garlock Packing Co.	"			"
668	"	"	"	Pyroxylin Finishes	E.I. duPont de Nemours	ROSM			Renewed for 1 year
669	"	"	"	Plating Generators	Chandeysson Elec. Co.	ROSM			Renewed for 1 year
670	"	"	"	Milling Cutters	Goddard & Goddard Co.	ROSM			Renewed for 1 year
671	"	"	"	Drill Jig Bushings	Ex-Cell-O Tool & Mfg. Co.	ROSM			Renewed for 1 year
672	"	"	"	Abrasive Paper & Cloth	Armour & Co.	ROSM			Renewed for 1 year
					Minn. Mining & Mfg. Co.	"			"
					Carborundum Co.	"			"
					Behr-Manning Corp.	"			"
673	"	"	"	Adding Machines	General Office Equip. Co.	ROSM			Renewed for 1 year
674	"	"	"	Tools & Equipment	Michigan Tool Co.	ROSM			Renewed for 1 year
675	"	"	"	White Lead	National Lead Co.				Renewed for 1 year
676.	80	SSC	12/10/30	Cup Grease G-1-2-3-5	Swan-Finch Oil Corp.	Req.			1 year from 1/1/31
677	80	SSC	12/10/30	Carburizing Boxes	Swedish Crucible Steel Co.	ROSM			1 year from 12/1/30
678	"	"	"	Cyanide-Sodium, Copper	Charles Hardy, Inc.	Req.			1 year from 1/1/31

(1) GPC = General Purchasing Committee. SSC = Standing Sub-Committee. (2) ROSM = Requirements of Seller's make. (3) M.P. = Multiple Product Quantity Discount. Red line signifies contracts with du Pont. Green line signifies contracts with du Pont's competitors.

6872

20,274

Item No.	Mtg. No.	Committee	Date of Action	Product Contracted	Supplier	Portion Of (2) Require	Kind Of (3) Discount	Participation	Term of Contract
679	80	SSC	12/10/30	Files	Heller Bros. Co.	ROSM			1 year from 1/1/31
680	"	"	"	Milling Cutters, etc.	Goddard & Goddard Co.	ROSM			1 year from 1/1/31
681	"	"	"	Renewable Fuses	Great Western Fuse Co.	ROSM			1 year from 1/1/31
682	"	"	"	Transmission Lubricants	White Star Refining Co.	Req.			1 year from 11/1/30
683	"	"	"	Fire Extinguishers	Amer.LaFrance & Foamite Co.	ROSM			Renewed
684	"	"	"	Tools & Equipment	Nat'l. Twist Drill & Tool Co.	ROSM			Renewed
685	"	"	"	Mimeograph Supplies	A. B. Dick Co.	ROSM			Renewed
686	"	"	"	Electric Controlling Devices	Cutler-Hammer Co.	ROSM			Renewed
687	81	SSC	2/10/31	Stellite	Haynes Stellite Co.				12 mos. from 3/1/31
688	82	SSC	3/17/31	Drills	Nat'l. Twist Drill & Tool Co. Amer. Twist Drill & Tool Co.	ROSM "			1 year "
689	"	"	"	Caustic Soda GM 1806-M	Dow Chemical Co.				
690	"	"	"	Soda Ash-GM-1801-M-1803M	Detroit Soda Prod. Co.				
691	"	"	"	Parco Powder & Bonderite	Parker Rust Proof Co.				
692	"	"	"	Factory Towels	Callaway Mills Inc.				
693	83	SSC	4/14/31	Blueprint & Brownprint Paper	Frederick Post Co.	ROSM			1 year from 5/1/31
694	83	SSC	4/14/31	Pencils, Erasers, etc.	Gregory-Mayer-Thom Co.				1 year
695	"	"	"	Die Sets	Gullberg Sales & Mfg. Co.	ROSM			1 year

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7873

20725

Item No.	Mtg. No.	Committee (1)	Date of Action	Product Contracted	Supplier	Portion Of (2) Require	Kind Of (3) Discount	Participation	Term of Contract
696	83	SSC	4/14/31	White Lead in Oil & Dry	National Lead Co.				Renewed
697	84	SSC	5/12/31	Chromic Acid CM 1816-M	Mutual Chemical Co.				1 year from 5/15/31
698	"	"	"	Miniature Lamps	Tung-Sol Lamp Co.	Req.			1 year from 6/1/31
699	"	"	"	Mazda Lamps	Mich.Div. G.E.Co.	Req.			1 year from 6/1/31
700	"	"	"	Oxygen & Acetylene	Air Reduction Sales Co.				1 year from 5/1/31
701	85	SSC	6/16/31	Rolls	Ditto, Inc.	ROSM			1 year from 7/1/31
702	"	"	"	Fittings	Alemite Corp.		Quantity		1 year from 7/1/31
703	"	"	"	Aluminum	Alum. Co. of America	"			Extended to 12/31/31
704	"	"	"	Scales	Toledo Scale Co.	ROSM			Renewed
705	"	"	"	Biscuits	Nat'l. Biscuit Co.				Renewed
706	"	"	"	Tubing	Bundy Tubing Co.	ROSM			Renewed
707	86	SSC	7/14/31	Locks & Parts	Briggs & Stratton	ROSM	Quantity		1 year from 7/1/31
708	"	"	"	Office Furniture	Shaw-Walker Co.	ROSM			Renewed
709	87	SSC	8/11/31	Gas Welding & Cutting Apparatus	Air Reduction Sales Co.				Renewed

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9202

7487

Item No.	Mtg. No.	Committee	Date of Action	Product Rejected	Supplier	Remarks
1	4	GPC	3/14/23	Burlap		
2	5	GPC	4/17/23	Linoleum		
3	"	"	"	Insulating Materials		
4	"	"	"	Pyralin		
5	"	"	"	Name Plates		
6	"	"	"	Automobile Trunks		
7	"	"	"	Grease Cups		
8	"	"	"	Band Saws		
9	"	"	"	Battery Acid		
10	"	"	"	Welding Wire		
11	"	"	"	Fire Hose		
12	"	"	"	Lamp Bases		
13	"	"	"	Respirators		
14	"	"	"	Metal Pails & Buckets		
15	"	"	"	Brake Lining		Too special
16	"	"	"	Steering Wheels		Too special
17	"	"	"	Abrasive Wheels		
18	"	"	"	Neutral Transmission Locks		Too special

Red line signifies contract rejected of material available from du Pont.

2702

2875

Item No.	Mtg. No.	Committee	Date of Action	Product Rejected	Supplier	Remarks
19	5	GPC	4/17/23	Copper		
20	"	"	"	Brass		
21	6	GPC	5/5/23	Anodes - Copper, Nickel		
22	"	"	"	Flexible Metallic Conduit		Too many different sizes being used
23	"	"	"	Die Heads		No saving
24	"	"	"	Portland Cement		
25	"	"	"	Foundry Sand		
26	1	SSC	8/13/23	Bow Sockets		No saving
27	"	"	"	Wood Bows		
28	"	"	"	Forgings		No saving
29	"	"	"	Garage Supplies		
30	"	"	"	Power Plant Supplies		
31	"	"	"	Pumice		
32	"	"	"	Fans (Automobiles)		Too special
33	"	"	"	Pig Iron		Special requirements
34	"	"	"	Tripoli		
35	2	SSC	8/21/23	Loading Decks		
36	3	SSC	9/21/23	Machine Oil S-016		Small consumption

Red line signifies contract rejected of material available from du Pont.

8202

9876

Item No.	Mtg. No.	Committee	Date of Action	Product Rejected	Supplier	Remarks
37	3	SSC	9/21/23	Nails (Other than upholstry)		
38	"	"	"	Fluted Neck Bolts		
39	"	"	"	Hub Bolts		
40	"	"	"	Studs		
41	"	"	"	Dowel Pins - Chamfered Ends		
42	"	"	"	Dowel Pins - Square Ends		
43	"	"	"	Plain Escutcheon Pins		
44	"	"	"	N.P. Escutcheon Pins		
45	"	"	"	Straight Pins-Chamfered Ends		
46	"	"	"	Straight Pins - Square Ends		
47	"	"	"	Soft Steel Pins		
48	"	"	"	N.P. Cotter Pins		
49	9	GPC	9/27/23	Sheet Steel		
50	"	"	"	Copper Wire		No saving
51	10	GPC	10/25/23	Leather Substitute and Rubber Coated Fabrics		Cost plus unsatisfactory
52	"	"	"	Jacks		Various requirements
53	"	"	"	Springs - Chassis		

Red line signifies contract rejected of material available from du Pont.

6202

Item No.	Mtg. No.	Committee	Date of Action	Product Rejected	Supplier	Remarks
54	10	GPC	10/25/23	Tanks - Gasoline		
55	"	"	"	Tool Kits		
56	"	"	"	Universal Joints		Too special
57	"	"	"	Valves - Motor		Too special
58	"	"	"	Wheels		
59	5	SSC	10/24/23	Sheets - Steel		No saving
60	"	"	"	Denatured Alcohol		
61	"	"	"	Carbide		
62	11	GPC	12/6/23	Fuel Oil		
63	5	SSC	12/5/23	Steering Wheels		
64	"	"	12/6/23	Seamless Steel Tubing		
65	"	"	"	Power Plant Oils		
66	"	"	"	Typewriters		
67	12	GPC	1/2/24	Steel - Alloy		
68	6	SSC	12/20/23	Loading or Shipping Blocks - Loading Decks		
69	7	SSC	1/3/24	Bolts - Step		No saving
70	"	"	"	Washers - Plain		No saving

Red line signifies contract rejected of material available from du Pont.

Item No.	Mtg. No.	Committee	Date of Action	Product Rejected	Supplier	Remarks
71	7	SSC	1/3/24	Pins - Taper		No saving
72	"	"	"	Screws - Lag		"
73	"	"	"	Bolts - Stove & Carriage		"
74	"	"	"	Bolts - Machine		"
75	"	"	"	Rivets - Plain Steel		"
76	"	"	"	Nuts		"
77	"	"	"	Screws - Machine		"
78	"	"	"	Screws - Wood & Drive		"
79	"	"	"	Pins - Cotter		"
80	8	SSC	3/7/24	Hospital Supplies		
81	"	"	"	Photographic Supplies		
82	"	"	"	Service Station and Dealers Signs		Too seasonal and special
83	7	SSC	2/21/24	Thread		
84		GPC	4/18/24	Chassis Springs		
85		"	"	Emery Paste		Too small
86		SSC	3/18/24	Sand Paper		
87	15	GPC	7/2/24	Paint Spraying Equipment and Supplies		

Red line signifies contract rejected of material available from du Pont.

Item No.	Mtg. No.	Com-mit-tee	Date of Action	Product Rejected	Supplier	Remarks
88	10	SSC	7/1-2/24	Lock Washers		
89	"	"	"	Export Paper		No saving
90	"	"	"	Timing Gears		
91	"	"	"	Cutlery Tools		
92	11	SSC	9/4/24	Machine Oils - M-15 - M-26		
93	"	"	"	Transmission & Differential Lubricants A-9 - A-15		
94	"	"	"	Blending Oils S-9		
95	"	"	"	Motor Oils A-30 - A-030		
96	1	PA-EL.G.	10/29/24	Brass & Copper - Bars, Rods, etc.		
97	"	"	"	Terminal Leads		
98	"	"	"	All Other Wire		
99	"	"	"	Sheets for Armature & Field Core Laminations		
100	12	SSC	11/6/24	Tubular Rivets		
101	"	"	"	Tote Pans		
102	1	PA-E.G.	11/14/24	Coal		
103	"	"	"	Oils- All Kinds		

Red line signifies contract rejected of material available from du Pont.

[4880]

2802

Item No.	Mtg. No.	Com-mit-tee	Date of Action	Product Rejected	Supplier	Remarks
104	1	PA-E.C.	11/14/24	Acid - Sulphuric 66°		
105	"	"	"	Gages - Limit		
106	"	"	"	Boxes & Lumber		
107	"	"	"	Steels - All Kinds		
108	13	SSC	12/12/24	Acid		
109	"	"	"	Steel		
110	"	"	"	Bale Ties - Wire		
111	15	SSC	3/6/25	Westinghouse Products		
112	"	"	"	Oils, All Kinds		
113	16	SSC	4/1/25	Heat Insulating Materials		
114	"	"	"	Solder		
115	"	"	"	Addressograph, Stamp, & Multigraph Ribbons		
116	"	"	"	Cold Drawn Seamless Tubing		
117	"	"	"	Tire Carriers		
118	18	SSC	5/22/25	Cold Drawn Brass & Copper Tubing		
119	"	"	"	Ink		

Red line signifies contract rejected of material available from du Pont.

[4881]

2083

Item No.	Mtg. No.	Committee	Date of Action	Product Rejected	Supplier	Remarks
120	19	SSC	6/23/25	Paper Towels in Packages		
121	"	"	"	Paper Towels in Rolls		Too small
122	20	SSC	9/23/25	Leather Belting		
123	"	"	"	Fire Extinguishers	Amer. LaFrance Fire Engine Co.	
124	"	"	"	Oakite	Oakley Chemical Co.	
125	21	SSC	11/9/25	Cleaning Materials	J. B. Ford Co.	
126	"	"	"	Toilet Paper in Packages	Sanitary Products Corp.	
127	"	"	"		Wagner Electric Co.	
128	22	SSC	12/9/25	Brass & Copper Tubing		Market conditions
129	23	SSC	1/28/26	Tags		
130	22	GPC	1/29/26	Ammeters - Anti-Squeak Ball Joints - Brake Drums Brake Lining - Bumpers-Metal Carburetors - Carpets & Mats Clutch Facings - Cotton Batts Curtain Fasteners -Cushion Springs Die Castings - Fans - Fan Belts Forgings - Gaskets Gasoline Gages - Gas. Strainers Gas. Tanks - Grey Iron Castings Heaters - Head Lamps - Hub Caps Insulated Cable - Lubricating Fittings Main-Conn. Rod & Thrust Bearings Motormeters Oil Gages - Oil & Grease Guns		

Red line signifies contract rejected of material available from du Pont.

[4882]

Item No.	Mtg. No.	Com-mit-tee	Date of Action	Product Rejected	Supplier	Remarks
131	22	GPC	1/29/26	Oil Strainers - Radiator Filler Caps - Silent Chains - Snubbers - Stampings - Stop Lamps - Tires - Tire Pumps - Tool Kit Tools - Tubing Fittings - Valves - Washers - Windshields - Yoke Ends		
132	25	SSC	6/8/26	Cold Drawn Steel		
133	"	"	"	High Speed Tool Steel	Kuhn Company	
134	"	"	"	Oil Cans & Oil Can Holders		
135	"	"	"	Toilet Paper in Rolls		Not sufficient requirements
136	27	SSC	7/13/26	Paints for Non-Productive & Maintenance Use		
137	"	"	"	Floor Paints		
138	"	"	"	Drawing Paper - Pencil Tracing Cloth - Tracing Cloth, Imperial - Valium Paper		
139	28	SSC	7/23/26	Motor & Control Equipment	Fairbanks Morse & Co.	
140	"	"	"	Ross Dressers		
141	31	SSC	10/12/26	Carbon Paper		
142	"	"	"	Typewriter Ribbons		

Red line signifies contract rejected of material available from du Pont.

[4883]

2085

Item No.	Mtg. No.	Committee	Date of Action	Product Rejected	Supplier	Remarks
143	31	SSC	10/12/26	Elliott Fisher Rolls		
144	32	SSC	11/9/26	Goggles & Head Masks	Willson Goggles, Inc.	Small volume
145	"	"	"	Liquid Soap - 15, 20, 35%		
146	"	"	"	Sylphons		Various requirements
147	"	"	"	Lithographed & Engraved Name Plates		
148	"	"	"	Bundy Tubing		
149	33	SSC	12/14/26	Mimeograph Machines & Supplies	A. B. Dick Co.	
150	"	"	"	Hospital Supplies		
151	"	"	"	Carbon Tool Steel		Various requirements
152	"	"	"	Lockwashers	Shakeproof Lockwasher Co.	
153	34	SSC	1/18/27	Striping Materials & Thinners		Scattered requirements
154	"	"	"		Truscon Steel Co.	
155	"	"	"	Scales	American Kron Scale Co.	Too small
156	"	"	"	Steel Bins & Shelving		
157	35	SSC	1/26/27	Stationery Supplies		
158	36	SSC	2/8/27	Time Clock Cards		Varied requirements
159	"	"	"	Autographic Register Machines		Too small

Red line signifies contract rejected of material available from du Pont.

[4884]

Item No.	Mtg. No.	Com-mit-tee	Date of Action	Product Rejected	Supplier	Remarks
160	38	SSC	4/12/27	Asbestos Products - Insulat-	Banrock Products Co.-Phillip	
				ing Materials	Carey Co.-Johns-Manville, Inc.	Unfavorable proposals
161	40	SSC	6/28/27	Duco Thinner	U. S. Industrial Alcohol Co.	Prices too high
162	"	"	"	Drive, Machine & Wood Screws		
163	41	SSC	8/9/27	Westinghouse Products	Westinghouse Electric & Mfg.Co	No price advantage
164	"	"	"	Laundry Equipment	American Laundry Machinery Co.	
165	"	"	"	Carbon Paper & Typewriter		Varied requirements
				Ribbons		
166	"	"	"	Denatured Alcohol		Too seasonal
167	42	SSC	9/30/27	Renewable Fuses		
168	"	"	"	Copper Asbestos Gaskets		No economy
169	"	"	"	Loading Decks		
170	"	"	"	Mailing Lists	R. L. Polk Co.	
171	43	SSC	10/11/27	Printed Forms		Varied requirements
172	"	"	"	Scales	Fairbanks Morse & Co.	Too small
173	"	"	"	Reamers, Standard & Special	Schellenback Hunt Tool Co.	Too small
174	"	"	"	Calculating Machines	Marchant Calculating Machine Co.	Too small
175	"	"	"	Strip, Sheets & Sheet Mill	Columbia Steel Co.	Too small
				Products.		

Red line signifies contract rejected of material available from du Pont.

[455]

11

2804

7088

Item No.	Mtg. No.	Committee	Date of Action	Product Rejected	Supplier	Remarks
176	43	SSC	10/11/27	Machines for Handling Gummed Tape		Too small
177	"	"	"	Alloy Steel - Hot & Cold Drawn Bars		Market conditions
178	45	SSC	12/8/27	Muslin Mailing Bags		
179	46	SSC	1/17/28	Tubular Rivets		
180	"	"	"	Bronze Bushings & Bearings		
181	"	"	"	Tung-Sol Miniature Lamps	Tung-Sol Lamp Works	Supplier unable to meet requirements
182	"	"	"	Gummed Tape in Rolls - Gummed Paper		Varied requirements
183	47	SSC	2/14/28	Self Tapping Screws	Parker-Kalon Co.	
184	"	"	"	Packing	Crandall Packing Co.	
185	"	"	"		McBee Binder Co.	
186	"	"	"	Cork Covering, Cork Lagging, etc.	Armstrong Cork Co.	Too small
187	"	"	"	Typewriters	Underwood Typewriter Co.	Unnecessary
188	"	"	"	Timing Chains		Too special
189	"	"	"	Automobile Jacks		
190	"	"	"	Sand Blast Hose		Too small

Red line signifies contract rejected of material available from du Pont.

[4886]

Item No.	Mtg. No.	Committee	Date of Action	Product Rejected	Supplier	Remarks
191	47	SSC	2/14/28	Machinery Enamels		
192	"	"	"	Chromic Acid		
193	"	"	"	Sponges		
194	"	"	"	Chamois Skins		
195	"	"	"	Tool Kits		
196	48	SSC	3/13/28	Transformers	Wagner Electric Corp.	
197	"	"	"	Gasoline Trucks & Tractors	Clark Trucktractor Co.	Too small
198	"	"	"	Shim Steel Stock		Too special
199	49	SSC	4/11/28	Pig Iron	Picands Mather & Co.	
200	"	"	"	Oil Tanks & Pumps	Wayne Co.	Too small
201	"	"	"	Piston Rings & Piston Pins	McQuay-Norris Mfg. Co.	Too small
202	"	"	"	Vacuum Tanks	Stewart-Warner Speedometer Corp.	
203	"	"	"	Anti-Freeze Material		Too special
204	"	"	"	Marking Devices		Insufficient volume
205	50	SSC	4/17/28	Nickel Anodes		
206	"	"	"	Fibre & Corrugated Paper Products, Including Boxes		

Red line signifies contract rejected of material available from du Pont.

[4887]

7089

Item No.	Mtg. No.	Committee	Date of Action	Product Rejected	Supplier	Remarks
207	50	SSC	4/17/28	Machine Tools	Bullard Machine Tool Co.	
208	"	"	"	Ground Thread Taps	John Bath & Co.	
209	"	"	"	Motors	General Electric Co.	
210	"	"	"	Misc. Contractor's Equipment	Contractors Equipment Co.	
211	"	"	"	Adding Machine Paper	Burroughs Adding Machine Co.	
212	51	SSC	5/8/28	Fibre		
213	"	"	"	Carburetor Choke Assy.		
214	"	"	"	Oil Can for Shop Use		Too small
215	52	SSC	6/12/28	Vacuum Cleaners	Eureka Vacuum Cleaner Co.	
216	"	"	"	Automatic Pencils	Wahl Co.	No economy
217	"	"	"	High Speed Tool Steel		Varied requirements
218	"	"	"	Oil Soap GM 2252-M		
219	"	"	"	Tripoli GM 1606-M		
220	"	"	"	Rodine		
221	"	"	"	Tires for Maintenance Purposes		
222	"	"	"	Do/More Chairs	Do/More Chair Co.	
223	"	"	"	Motors, etc.	Allis Chalmers Co.	

Red line signifies contract rejected of material available from du Pont.

[4888]

2090

Item No.	Mtg. No.	Com-mit-tee	Date of Action	Product Rejected	Supplier	Remarks
224	52	SSC	6/12/28	Fire Extinguishers	Pyrene Mfg. Co.	
225	54	SSC	8/15/28	Renewable Fuses & Links		Varied preferences
226	56	SSC	10/9/28	Expansion Plugs		
227	"	"	"	Hub Caps		
228	"	"	"	Brake Lining		
229	"	"	"	Thermostats		
230	"	"	"	Yoke Ends		
231	"	"	"	Insulated Cable		
232	"	"	"	Packings for Water Pump Shafts		Varied requirements
233	"	"	"	Motors & Control	Westinghouse Electric & Mfg. Co.	
234	"	"	"	Friction Tape	Dryden Rubber Co.	
235	"	"	"	Motors & Control Equipment	Crocker-Wheeler Elec. Mfg.Co.	
236	"	"	"	Electric Motors	Howell Electric Motors Co.	
237	"	"	"	Sal Soda	Detroit Soda Products Co.	
238	"	"	"	Motors	Wagner Electric Corp.	
239	"	"	"	Dry Cells & Flashlight Batteries	Bright Star Battery Co.	

Red line signifies contract rejected of material available from du Pont.

[4889]

1692

2692

Item No.	Mtg. No.	Com-mit-tee	Date of Action	Product Rejected	Supplier	Remarks
240	57	SSC	11/13/28	Motor Valves		
241	"	"	"	Dial Indicators, etc.	Federal Products Corp.	Too small
242	58	SSC	12/11/28	Welding Rod		
243	"	"	"	Steel Lockers		
244	"	"	"	Rem-Rand Products	Remington-Rand	
245	"	"	"	Shovels	Ames Shovel & Tool Co.	Insufficient volume
246	"	"	"	Woodworking Machines	J. Lee Hackett Co.	
247	"	"	"	Varnish & Oil Type Materials	E.I. du Pont de Nemours Co.	No savings
248	"	"	"	Gasoline Tank Caps		
249	60	SSC	2/12/29		Remington-Rand, Inc.	
250	61	SSC	3/21/29	Motor Oils		No savings
251	"	"	"	New Belting	Cleveland Oak Belting Co.	
252	"	"	"	Trailers	Lakewood Engineering Co.	
253	"	"	"	Detergent	Stuart Industrial Service	Not sufficient volume
254	"	"	"	File Guides	Alum. Co. of America	Not sufficient volume
255	62	SSC	4/11/29	Tubular & Split Rivets		

Red line signifies contract rejected of material available from du Pont.

[4890]

Item No.	Mtg. No.	Com-mit-tee	Date of Action	Product Rejected	Supplier	Remarks
256	62	SSC	4/11/29	Misc. Maintenance Supplies,		
				Platers & Polishing Supplies,		
				Janitors & Safety Supplies,		
				Furnace & Foundry Supplies,		
				Misc. Non-Productive Materials		
257	"	"	"	Steel Shot		Too small
258	63	SSC	5/7/29	Nickel Salts-Single & Double		
259	"	"	"	Grease Fittings	Gresser Mfg. Co.	
260	"	"	"	New Ply Belting	F. J. Ramiville Co.	Small participation
261	65	SSC	7/23/29	Steel Safes	Meilink Safe Co.	Not sufficient volume
262	66	SSC	8/13/29		Dumore Tap & Tool Co.	Insufficient participation
263	"	"	"		Gogan Machine Co.	Insufficient participation
264	"	"	"		John-Sons Gage Works	
265	"	"	"	Rosin Cleaner		
266	"	"	"	Mailing Machines	Postage Meter Co.	Insufficient participation
267	67	SSC	9/10/29	Gasoline Gages	King-Seeley Corp.	
268	"	"	"	Hose Clamps	Federal Tin Co.	
269	68	SSC	10/15/29	Corrugated Boxes		No advantage
270	"	"	"		American Optical Co.	Minimum prices obtainable regardless

Red line signifies contract rejected of material available from du Pont.

[illegible]

Item No.	Mtg. No.	Committee	Date of Action	Product Rejected	Supplier	Remarks
271	69	SSC	11/13/29	Electric Suction Cleaners	National Super Service Co.	
272	"	"	"	Nickel Anodes	Hanson-Van Winkle-Munning Co.	
273	70	SSC	12/12/29	Lock Washers		
274	"	"	"	Cutters & Hobs	Illinois Tool Co.	
275	"	"	"	Rustless Iron or Stainless Steel		
276	"	"	"	Grinding Equipment	Hutto Engineering Co.	Too small
277	71	SSC	1/14/30	Hobs	Barber-Colman Co.	
278	"	"	"		Automatic Products Co.	
279	"	"	"		Youngstown Boiler & Tank Co.	Too small
280	"	"	"		Driver-Harris Co.	Too small
281	"	"	"	Stationery Supplies	Beecher-Peck & Lewis Gregory-Mayer-Thom Tower Bros.	
282	72	SSC	2/11/30	Standard Screw Parts		
283	"	"	"	Aluminum Spar Mixing Liquid		Too small
284	73	SSC	3/13/30	Texrope Drives	Allis Chalmers	
285	"	"	"	Files	Cleveland File Co.	
286	"	"	"	Bearing Metal	Frederickson Co.	

Red line signifies contract rejected of material available from du Pont.

Item No.	Mtg. No.	Committee	Date of Action	Product Rejected	Supplier	Remarks
287	73	SSC	3/13/30	Liquid Soap GM-2253-4-5M		No advantage
288	74	SSC	4/8/30	Masking Tape		No general use
289	"	"	"	Waterproof Paper for Export Case Lining		No advantage
290	"	"	"	Abrasive Grits	Carborundum Co.	
291	"	"	"		Leeds & Northrup	
292	"	"	"	Standard Varnish Albron	Alum. Co. of America	Insufficient volume
293	"	"	"	Copy Holders	Error-No, Inc.	Insufficient participation
294	"	"	"	Adj. Thread Snap Gages, etc	Johnson Gage Works	Insufficient participation
295	75	SSC	5/13/30	Taps	Hanson-Whitney	
296	"	"	"	Wood Chock Blocks	Foshee Lumber Co.	
297	"	"	"		Cleveland File Co.	
298	"	"	"	Transformers	General Electric Co.	
299	76	SSC	6/18/30	Tires		Not advisable
300	"	"	"	Painted Surface Cleaner-GM-2404M		Requirements too small
				Metal Cleaner - GM-2408M		" " "
301	"	"	"	Anti-Squeak Material	L. H. Gilmer Co.	
302	"	"	"	Shelving-Steel		

Red line signifies contract rejected of material available from du Pont.

[4893]

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Item No.	Mtg. No.	Committee	Date of Action	Product Rejected	Supplier	Remarks
303	76	SSC	6/18/30		Threadwell Tool Co.	Insufficient volume
304	"	"	"		Whitehead & Kales	Insufficient volume
305	77	SSC	8/12/30	Advertising Printing Contracts	Barnes Michigan Corp.	
					Evans-Winter-Hebb, Inc.	
					Thompson Printing Co.	
					Ainger Printing Co.	
					Wayne Colorplate Co.	
					Michigan Electrotype and Stereotype Co.	
					Northern Electrotype Co.	
					Edwards & Deutsch Lithographing Co.	
					Thos. P. Henry Co.	
					Dick Short Co.	
306	78	SSC	9/16/30	Dole Compression Fittings		
307	"	"	"	Accessories such as: Cigar Lighters, Clocks, Outside Mirrors, Wind Deflectors, Spot Lights, etc.		
308	79	SSC	10/21/30	Punch Press Machinery and Equipment	Toledo Machine & Tool Co.	
					Hooven-Owens-Rentschler Co.	
309	"	"	"	High Tension Cable		
310	"	"	"	Socket Wrenches		
311	"	"	"	Mouldings		
312	80	SSC	12/10/30	Chassis Frames	A. O. Smith	

Red line signifies contract rejected of material available from du Pont.

[4814]

Item No.	Mtg. No.	Committee	Date of Action	Product Rejected	Supplier	Remarks
313	80	SSC	12/10/30	Portable Electric Tools		
314	"	"	"	Leather Products - Gloves & Aprons		
315	"	"	"	Asbetos Products - Mittens & Aprons		
316	"	"	"	Rubber Products - Hose of Various Specifications		
317	"	"	"	Electric Trucks & Tractors		
318	"	"	"	Ready Power Units		
319	"	"	"	Steel Pens & Penholders		
320	"	"	"	Woodworking Machinery		
321	81	SSC	2/10/31		Jam Handy Picture Service	
322	"	"	"	Socket Wrenches	Snap-On Wrench Co.	
323	"	"	"	Ventilating & Heating Units	York Heating Co.	
324	"	"	"	Striping Brushes	Gem Striper Co.	
325	"	"	"	Trailers & Hand Trucks	Mercury Mfg. Co.	
326	82	SSC	3/17/31	Window Glass-Maintenance		Varied requirements
327	"	"	"	Wire Rope-Maintenance		

Red line signifies contract rejected of material available from du Pont.

Item No.	Mtg. No.	Com-mit-tee	Date of Action	Product Rejected	Supplier	Remarks
328	83	SSC	4/14/31	Cutting Machines	Eastman Machine Co.	
					J. B. Gury Co.	
329	"	"	"	Rosin Metal Cleaner GM 2403M	Detroit Soda Products Co.	
330	"	"	"	Platers' Cleaner GM 2410M	J. B. Ford Sales Co.	
331	"	"	"	Metal Cleaner GM-2401-M	Blockson Chemical Co.	
332	"	"	"	Tanks & Pumps	S. F. Bowser Co.	
333	85	SSC	6/16/31	Tying Wire	Gerrard Co.	
334	"	"	"		Lincoln Electric Co.	
335	86	SSC	7/14/31	Tire Chains	Pyrene Mfg. Co.	
336	"	"	"	Fuel Oil		
337	"	"	"	Friction Tape GM-658M		
338	"	"	"	Fibre Rod - Sheet - Tube		
339	"	"	"	First Aid Supplies and Pharmaceuticals		
340	"	"	"	Transformers	General Electric Co.	
341	87	SSC	8/11/31	Anti-Freeze Methanol	E. I. du Pont	No price advantage
342	"	"	"	Washing Machines	G. S. Blakeslee & Co.	

Red line signifies contract rejected of material available from du Pont.

[4896]

Defendant's Exhibit (GM) No. 156

7099

EXCERPTS
GENERAL PURCHASING COMMITTEE
RE
ILLUSTRATIONS OF CONTRACTS PRODUCING SAVINGS

General Purchasing Committee Minutes, June 6, 1923, page 2.

Unfinished business:-Reports on:-

(i) Carbon Paper)
(j) Typewriter Ribbons)

Report from Mr. Nobes of Buick Motor Company who has been conducting study of these two items for General Purchasing Committee recommending that General Motors standardize on a 7 lb. no-smutting Carbon Paper at a price of approximately $4.00 per thousand and recommending the adoption of a 290 count ribbon for general use at approximately $45.00 per gross, and a 304 count ribbon for billing purposes at $54.00 per gross received.

Decided that Secretary would send to Divisions, or have them order direct, a box of M. B. Cook Company's Beaver Brand H750, for trial with statement that this paper was being used throughout the Buick Motor Company and that upwards of $20,000.00 could be saved to General Motors through this standardization.

It is desired to be able to offer one or more competitive makes of equal quality and price, and to also offer a higher grade of paper where same is considered to be necessary for special work.

Progress report.

General Purchasing Committee Minutes, August 30, 1923, page 2.

Reports on Studies by Factory Section:

(a) Insulated Cable.

As previously reported GMC standard specifications have been accepted by Chevrolet, General Motors Truck, Oakland, and Olds. Factory Section reports that careful study of the Buick requirements has been completed and recommendations placed before their Engineering and Purchasing Departments. That on starter cable, standard spark plug terminals, and high tension ignition cable savings in prices through the adoption of the standards are indicated amounting to about 27¢ per car. Mr. DeWaters has taken the suggested changes under advisement and sample cables for wiring of experimental cars have been delivered to him. No further report on Cadillac.

4897

General Purchasing Committee Minutes, March 7, 1924, page 2.

Reports on Studies.

(d) Car Frames.

Modification of contract with A. O. Smith Corporation has been approved and signed. Mr. Allen submitted a report showing that credit memorandum from A. O. Smith covering the additional discount of 18% for period from September 1, 1923 to January 31, 1924 amounting to $212,821.92 had been received. He estimates that additional savings to accrue from February 1 to July 1, 1924, based on present production schedules would amount to $269,072.97. On the same schedule basis a refund of $22,000.00 being the excess above tool costs allowed will issue, making the total saving for the ten months period of $503,894.89.

General Purchasing Committee Minutes, March 7, 1924, page 5.

The Committee is convinced that the use of GMC specifications and the making of general contracts for oils are effecting worth while savings for Divisions. In cases where only one Division uses a specified oil no general contract is made but the contract proposal prices will be forwarded to that Division for use in making its own purchases.

General Purchasing Committee Minutes, February 19, 1925, page 3.

General Matters.

(c) Battery Terminal Standardization.

Ground connections made of laminated copper strip have been adopted by all divisions except Buick at an indicated saving of $15,000.00 per annum. Buick have found certain reasonable objections to the use of this connection. It is hoped that their objections may be overcome as there is an indicated saving to Buick of $12,000.00 per year.

General Purchasing Committee Minutes, June 24, 1925, page 1.

General Matters.

(b) General Contracts for Advertising Printing.

Secretary announced that general contracts with Evans-Winter-Hebb, Inc. of Detroit for a minimum of one million dollars, and The Flint Printing Company for a minimum of three hundred fifty thousand dollars of advertising printing per year, for period of five years from date of June 1st, 1925, subject to cancellation on June 1st of any year upon one year's written

notice, had been concluded and divisions in the Michigan District were now participating in these contracts. The Flint Printing Company will accept orders for form printing under its contract, at the contract rates.

The Printing Department of the Executive Secretary's Staff has been established to co-operate with the divisions in utilizing these contracts to the fullest extent. It is indicated that the savings under these contracts will aggregate $250,000.00 per year.

Standing Sub-Committee Minutes, January 28, 1926, page 2.

General Matters.

(a) Diamonds.

Purchase Contract Investigation Section suggested that if they be authorized to purchase from 1000 to 1500 karats at a time a saving of approximately $3.00 per karat could be effected. With two exceptions, all divisions are securing their diamond requirements through this Section. 1925 purchases aggregated over $100,000.00. Authority granted to purchase from 1,000 to 1,500 karats at a time where above savings can be effected.

Standing Sub-Committee Minutes, March 15, 1927, page 2..

General Matters.

(j) Tags.

Item (a) page 1 of minutes of meeting of January 28, 1926. Copies of contract proposals together with typical exhibit of tag sizes and stocks were forwarded to divisions and attention called to economy of standardization. Recent check-up discloses that Chevrolet has saved in 1926, $6,169.80 by standardization of tags, and indicated that if A. C. Spark, Armstrong, Brown-Lipe-Chapin, Cadillac, Delco-Light, Harrison, Inland, Muncie, Oakland, Olds, Remy, Saginaw, United Motors and General Motors Detroit standardized so that general contract could be made, an additional $6,108.00 could be saved. Committee believes that a general contract will not produce these savings unless standardization is first effected.

Standing Sub-Committee Minutes, December 11, 1928, page 3.

General Matters.

(w) Automatic Products Co. Contract - Brief 524.
Letter calling attention to participation under above contract noted. Purchases to date are at the annual rate of $1,250,000., which will earn us a rebate of about $25,000. Had an additional $550,000 been placed, the additional rebate would have been $65,000. - equivalent to about 12% reduction on this amount of business.

Standing Sub-Committee Minutes, August 15, 1928, page 1.

General Matters.

(d) Air Reduction Sales Co.
Purchase Contract Section reported that for 11 months ending July 31, 1928, average monthly oxygen consumption 664,812 cu. ft. The old contract would have expired August 31st and were the average monthly consumption during the 12 months ending that date 700,000 cu. ft., we would have received a rebate of about $1,500 on acetylene consumed during the 8 months of the old contract cancelled April 30th. Secretary was instructed to advise Chevrolet - Flint, and Fisher Body of the savings to be effected through average monthly consumption of 700,000 cu. ft., requesting their cooperation in effecting this saving.

E

Defendant's Exhibit (GM) No. 157

7103

EXCERPTS
GENERAL PURCHASING COMMITTEE
RE
EFFORTS TO DETERMINE SAVINGS
THROUGH WORK OF PURCHASING COMMITTEE

General Purchasing Committee Minutes, July 2, 1924, page 3.

Miscellaneous Matters.

(d) Savings on General Contracts.

In order to justify the existence of the committee the determination of savings effected through the making of general contracts authorized by the committee is required. The following classified methods of computing savings were approved for use by the Purchase Section.

1 - Savings resulting from general contracts on sliding scale of discount basis.
(These would include contracts such as our present fuse contract where the discount increases with each thousand dollars of purchases made and where obviously the lumping of our purchases increases the amount expended.)

The quantity bought by divisions being known the savings can be easily computed.

2 - Savings resulting from quantity buying.
(Where prices vary inversely with quantities or tonnages.)

General contract prices compared with prices being paid by divisions at time general contracts were made, determine the savings.

3 - Savings resulting from the making of general contracts for items which have been substituted in kind or by specification as a result of study, for those previously used by divisions.
(Prices being paid by divisions at time of beginning of study or development compared with general contract prices determine the savings.)

4 - Savings resulting from the effect of agitation in the field of competitive supply through studies, development of general contract proposals, or other activities of the Committee though general contracts are not made.

7104

5 - Losses resulting from the making of general contracts.
(It is possible, although unlikely, that after general contracts are made, the terms of which might be unalterable, market conditions might change so that lower prices in the open market might be available.)

Downward revision of prices on general contracts already existing are to be included in the same class in which the saving was originally recorded.

The computed savings are to be approved by the Standing Sub-committee before being officially recorded.

Standing Sub-Committee Minutes, June 23, 1925, page 3.
General Matters.
(b) Savings Under General Contracts - Calendar Year 1924.
Tabulated savings effected through making of general contracts for calendar year of 1924, approved by divisions as having been made, aggregate $758,286.01. There are some items of indicated savings which were not approved by divisions which the Sub-committee intended to deal with at this meeting but which, for lack of time, are carried over to the next meeting.

The above amount represents ACTUAL savings and no indirect or intangible savings, effected through the operations of the committee, are included.

General Purchasing Committee Minutes, June 17, 1926, page 3.
General Matters.
(7) Savings Under General Contracts for 1925.
Secretary reported that actual savings under general contracts through participation by divisions, netted tangible savings as approved by divisions as having made for them during 1925 in amount of $1,359.310.24. It is the belief of the committee that the indirect and intangible savings aggregate a very large sum.

Standing Sub-Committee Minutes, March 15, 1927, page 3.
General Matters.
(1) Participation in Quantity Discount Contracts.

To keep Purchasing Agents informed of participation in quantity discount contracts so as to insure our getting the maximum possible discounts, committee ordered that there be published in the minutes of the Standing Sub-committee the participation in such contracts by quarters of the calendar year.

Standing Sub-Committee Minutes, March 15, 1927, page 3.
General Matters.
(n) Distribution of Credits and Refunds - Account of Participation in General Contracts.
It was ordered that in distributing credits and refunds to divisions who participated in general and quantity discount contracts carrying refund provisions, that those divisions receiving no credits should be notified by Committee Letter that they are receiving no credits account of non-participation.

General Purchasing Committee Minutes, April 12, 1927, page 4.
General Matters.
(j) 1926 Savings.
Secretary submitted report showing that participation in general contracts authorized by the committee resulting from the support given by the Purchasing Agents of divisions, had effected savings to the Corporation for the year 1926 in excess of $3,000.000.00. These savings were calculated in the manner approved by the Purchasing Agents during the past three years and are believed to be very conservative.

Standing Sub-Committee Minutes, October 9, 1928, page 2.
General Matters.
(n) Performance of Quantity Discount Contracts.
Agreed that 90 days prior to the expiration of quantity discount contracts Purchase Contract Investigation Section will, by letter, advise all divisions of the discount earned to that time, drawing attention to additional volume of business required to earn further discounts, all with a view to gaining the maximum possible quantity discount under the contract.

Defendant's Exhibit (GM) No. 158

7106

EXCERPTS
GENERAL PURCHASING COMMITTEE
RE
TWO-SOURCES-OF-SUPPLY QUESTION

Plan for Co-ordination of General Motors Purchases, Corrected to December 1, 1922, page 8.

9. One of the most important considerations that not only the General Purchasing Committee and the Purchase Section, Advisory Staff, but other Staff Sections co-operating with same must determine is the ability of a source of supply to assume an obligation that might be placed with such source, having in mind the ability of that source to comply with delivered requirements. Manifestly, it is essential in order to capitalize to the fullest possible extent the Corporation's purchasing power, all as outlined in this program, that same should be centralized in a limited number of places and in as big units as possible and conversely, it must be recognized that in capitalizing the purchasing power in that manner, a liability is created to the degree that the supplier assuming the obligation may not be able to comply with same.

General Purchasing Committee Minutes, January 2, 1924, page 1.

Miscellaneous Matters.

(c) For the purpose of enabling Divisions to keep in touch with sources of supply and to be in a position to feel out the market at any time and to encourage best possible service on part of contractor it was agreed that as regular procedure general contracts would read to cover not more than 80% of General Motors requirements of any item. Divisions will be required to take the percentage for which they are committed regardless of whether or not more favorable terms are offered on the open amount as it is believed that it is chiefly through the existence of general contracts that better prices on open amounts are frequently offered to Divisions.

Standing Sub-Committee Minutes, November 9, 1926, page 1.

General Matters.

(a) Revision of Pig Iron Contract.
Existing contract with M.A. Hanna Company which expires January 1, 1931 provides for a minimum quarterly tonnage of 15,000 tons and a maximum quarterly tonnage of 22,500 tons. Contractors

have informed us that they are prepared to take care of our entire requirements for 1927 estimated at from 150,000 to 200,000 tons and that they would undoubtedly favor revising the contract to a requirements contract.

After discussing the matter it was agreed that although the terms of the Hanna contract had, during the past two years, proved very favorable, we should seriously consider having two sources of supply for this important item.

Secretary was instructed to develop with other pig iron suppliers proposals for supplying our requirements in excess of the minimum specified under the Hanna contract.

Standing Sub-Committee Minutes, April 12, 1927, page 2.
General Matters.
(h) Machinery and Equipment.
The manner of our purchasing machinery and equipment was thoroughly discussed. It was the concensus of opinion that the Purchasing Departments were permitted practically no leeway in making such purchases and that usually the specifications from the Master Mechanics and Works Engineers' Department excluded competition. The Sub-committee records emphatically its belief that competitive prices should be secured on all machinery and equipment, and recommends to the Works Managers that in the selection of such items the Purchasing Departments be given at least a second choice in developing prices and conducting negotiations for purchases.

Standing Sub-Committee Minutes, February 11, 1930, page 1.
General Matters.
(b) Milling Cutters and Hobs.
Records indicate total requirements of over million dollars annually. At present time we have a volume discount agreement with Goddard and Goddard Company, and a similar arrangement has been authorized with Michigan Tool Company. The former specializes on Milling Cutters and the latter on Form Cutters and Hobs. It was deemed advisable to develop a second source on milling cutters. With this line-up divisions will have two quantity discount sources on Milling Cutters and one specializing on Form Cutters and Hobs. Divisions are urged, however, to develop the competitive situation thoroughly on all requirements.

Defendant's Exhibit (GM) No. 159

7108

EXCERPTS
GENERAL PURCHASING COMMITTEE
RE
ILLUSTRATIONS OF TWO SOURCES OF SUPPLY

General Purchasing Committee Minutes, January 4, 1923, page 2.
Unfinished Business Considered.
(f) Revised Program for Purchase of Steel Requirements.

Action: Approval of allotments as follows:

Carbon Steel Bars in Commercial and Special Forging Steels:

70% total requirements	105,000 Tons	Carnegie Steel Company
15% " "	22,500 "	Cambria Steel Company
15% " "	22,500 "	Open to Divisions

General Purchasing Committee Minutes, April 17, 1923, page 2.
Report on General Contract Proposals, ordered developed at Meeting of March 14, 1923.
(d) Brass and Copper - Sheets and Rods - Heavy Tubing.
(Summary of Contract Proposals submitted.)
Decided to award contract for 75% of requirements to Dec. 31, 1923 to American Brass Company, and 25% to Michigan Brass and Copper Company.

Standing Sub-Committee Minutes, September 21, 1923, page 4.
General contract proposals with the suppliers listed together with the percentages of General Motors requirements noted, were accepted.
(j) Step Bolts.
Kirk-Latty 75% of G.M. requirements.
Berry Brothers 10% of G.M. requirements.
Columbus Bolt 15% of G.M. requirements.

4996

Standing Sub-Committee Minutes, December 20, 1923, page 5 of Minutes of General Purchasing Committee of January 2, 1924.

Miscellaneous Matters.

(b) Leather

The contract concluded with General Leather Company for a two year period commencing January 1, 1924 was discussed.

Referring to the second paragraph, page 2, the agreement to purchase at least 75% of leather requirements from General Leather Company was approved.

Referring to the third paragraph, page 2, the question was raised as to what was meant by "reasonably in advance". The Secretary was requested to have General Leather Company inform the Committee concerning this.

Referring to fourth paragraph, page 2, it was agreed that our interest would be best served if quotations on 100% of the proposed orders were secured by the Divisions instead of on 25% of such proposed orders. It was further agreed that competitive prices might reasonably be furnished to General Leather Company but that the names of the bidders should be withheld until after the business were placed, subsequent to which information in full may be given concerning the competitive bidders.

Standing Sub-Committee Minutes, September 21, 1923, page 7.

Miscellaneous Business.

(g) Coal.

Prices from Bertha-Consumers Company for period of from September 1, 1923 to April 1, 1924 for 60% of General Motors requirements as follows were authorized.

Slack	2.50
Run of Mine	2.75
Egg, 3/4", & Lump	3.25

General Purchasing Committee Minutes, January 2, 1924, page 1.
Miscellaneous Matters.
(a) Steel.
Action of Standing Sub-committee in awarding contract to Carnegie Steel Company for 80% General Motors requirements of carbon steel was approved. No other contracts for carbon steel were awarded. No contract for alloy steels were awarded. Divisions to purchase independently.
Prices offered on general contract proposals on alloy steels by Crucible Steel, Bethlehem, and Donner were more favorable than those offered by either United Alloy or Central.
Copies of summaries of general contract proposals are being forwarded to Divisions.

Standing Sub-Committee Minutes, July 1 & 2, 1924, page 9 of Minutes of General Purchasing Committee of July 2, 1924.
General Contracts Authorized.
(e) Cap Screws.
Contract for milled from bar cap screws only authorized for six months from July 1, 1924 as follows:
80% of General Motors requirements to Automatic Products Company
20% of General Motors requirements open to divisions.

Standing Sub-Committee Minutes, June 8, 1926, page 1.
General Contracts Authorized.
(d) Carbonizing Compounds. GM-2001-M - 2002-M - 2003-M Special - Hyatt L4.
Contract with E. F. Houghton Company for 80% of General Motors requirements of these items authorized for six months from July 1, 1926. Divisions will try out carbonizing compound made by Char Products Company, Indianapolis, Indiana.

General Purchasing Committee Minutes, April 12, 1927, page 2.
General Matters.
(d) Pig Iron.
The maximum quarterly tonnage available under existing contract with M. A. Hanna Company is 22,500 tons. In view of our annual requirement in excess of 90,000 tons per year, it was agreed that a second source of supply is desirable although the contractor has established his facilities for supplying in excess of

150,000 tons. It was also agreed that contract with a second source for our requirements in excess of 90,000 tons per year but not to exceed 50,000 tons per year should be awarded and that the second source be Picands Mather & Company, Cleveland, Ohio.

Standing Sub-Committee Minutes, June 28, 1927, page 3.
General Contracts Authorized.
(c) Acetylene & Oxygen.
General contract for 75% of General Motors requirements for period of one year from July 1, 1927, with Air Reduction Sales Company.
General contract for 25% of General Motors requirements for period of one year from July 1, 1927 with Wall Brothers (Flint, Mich.).
Requirements of divisions who will participate in Wall Brothers contract to be ascertained by Secretary.

Standing Sub-Committee Minutes, November 8, 1927, page 1.
General Contracts Authorized.
(d) Friction Tape.
General contract for 80% of General Motors requirements of General Motors Specification G.M. 658-M with the Dryden Rubber Company for one year from January 1, 1928. This contract also includes sliding scale of quantity discount provision.

Standing Sub-Committee Minutes, June 12, 1928, page 3.
General Contracts Authorized.
(k) Soda Ash, 58%, GM 1801-M.
Soda Ash, Fluffy, GM 1803-M.
General contract for 80% of General Motors requirements for one year from July 1, 1928 with The Solvay Sales Corporation, if they equalize prices in carload lots.

Defendant's Exhibit (GM) No. 160

7112

EXCERPTS
GENERAL PURCHASING COMMITTEE
RE
THE PROBLEM OF SECRECY, KEEPING PRICES CONFIDENTIAL

Proposed Plan for Co-ordination of General Motors Purchases, May 8, 1922, by A. P. Sloan, Jr., page 5.

Method of Procedure.

4. In the case of contracts calling for rebates at the end of the month for the purpose of protecting prices or for any other purpose, such rebates should be handled by the Purchase Section, Advisory Staff, as might be worked out in each individual case and all such rebates would be credited through the General Office to the Division at the end of every month, not specifically but as a general sum. This would be desirable because to get the benefit of the lowest possible price objections are some times made on the part of the suppliers in disclosing that price. In this way the Divisions would get the full benefit of the reduced price by taking the adjustments as other income. While that method would, to a certain extent develop an incorrect cost of sales, the errors would be very small and such a method would be better probably than to deal with each individual item separately. In the event that the price made to the Corporation on any special contracts was an open one, the Purchase Section of the Advisory Staff would have no duties to perform after having effected the contract in question.

Plan for Co-ordination of General Motors Purchases, Corrected to December 1, 1922, by A. P. Sloan, Jr., page 8.

Method of Procedure.

7. In the case of contracts calling for rebates for the purpose of protecting prices or for any other purpose, such rebates should be handled by the Purchase Section, Advisory Staff, so far as records are concerned. All such rebates should be credited through the General Office to the Operations entitled to same at the end of each month, not specifically but as a general sum. This would mean that each Operation would get the benefit of the Corporation price and further, that the initial billing would be the lowest possible price that any Operation individually was able to obtain. This procedure is considered desirable because to get the benefit of the lowest possible price objections are some times made on the part of suppliers in disclosing that price. While this method would, to a certain extent, develop an incorrect cost of sales, the errors would be very small and it is believed preferable to deal in this manner than with each individual item separately. In the event that the price made to the Corporation on any special contract was no lower than the best price accorded any Operation, the Purchase Section, Advisory Staff, would have no duty to perform after having effected the contract in question.

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General Purchasing Committee Minutes, January 4, 1923, page 1.

Unfinished Business Considered.

(a) Question of Confidential Rebates.

Action: Deferred until specific case is presented.

General Purchasing Committee Draft of Proposed Circular Letter to Purchasing Agents, June 12, 1923, page 4.

12. Confidential Nature of Information.

In the distribution of Contract Briefs, and particularly regarding the information to be contained in the Monthly Circular Letters from the Committee, care must be taken to insure that the information contained therein is held confidential.

General Purchasing Committee Minutes, August 2, 1923, page 1.

Policies and Procedure.

(d) The matter of allowing competitive bidders to meet each others prices.

This subject was brought up for discussion with the view to setting up a policy for General Motors that would receive executive approval and contemplates assurance to bidders that prices would not be disclosed to competitors. The committee agreed that this policy is desirable and that they would support it but that it would be unwise to announce such a policy and not fully carry it out, this being doubtful of accomplishment.

(e) Disclosing of prices covered by General Motors contract.

Attention of the committee was called to indications that prices and terms contained in contract briefs distributed to divisions have in some cases been disclosed to competitors for the purpose of independently securing lower prices. It was agreed that such practices would hamper the work of the committee and the chairman was authorized to write a letter to purchasing agents insisting upon participation in General Motors contracts and dealing with the disclosing of prices on contract briefs and negotiating for purchase of items covered by contract briefs.

Co-ordination of Purchases (revised to September 1, 1923, page 12.
Method of Procedure.

11. Contract Rebates

In the case of contracts calling for rebates for the purpose of protecting prices, or for any other purpose, such rebates will be handled by the Purchase Section, Advisory Staff, so far as records are concerned. All such rebates will be credited through the General Office of the Corporation to the Operations entitled to them, at the end of each month - not specifically, but as a general sum. This means that each Operation will get the benefit of the Corporation's price and further that the initial billing will be the lowest possible price that any Operation individually is able to obtain. This procedure is considered desirable because to get the benefit of the lowest possible price, objections are sometimes made on part of suppliers in disclosing that price. While this method will to a certain extent develop an incorrect cost of sales, the errors will be very small and it is preferable to deal in this manner than with each individual item separately. In the event the price made to the Corporation on any special contract is no lower than the price accorded any Operation, then the Purchase Section, Advisory Staff, will have no duty to perform after having effected the contract.

General Purchasing Committee Minutes, October 25, 1923, page 2.
Miscellaneous Matters.

(d) Confidential Nature of Matters Treated at Meetings.

There are indications that decisions regarding matters discussed at meetings of the Committee and set forth in the minutes have been communicated to suppliers. It was agreed that the Chairman would write a letter to all Purchasing Agents instructing them to use every safeguard in the use and distribution of the minutes to insure the contents being treated as confidential.

General Purchasing Committee Minutes, July 2, 1924, page 2.
Miscellaneous Matters.

(c) Participation in General Contracts.

* * * *

Attention was drawn to Mr. Sloan's letter of August 8, 1923, dealing with the subject which read as follows -

* * *

FIRST: No Division is permitted to disclose prices on which general contracts are based, nor any special terms or conditions incident to said contracts, to any source whatsoever outside said Division.

General Purchasing Committee Procedure (revised October 1, 1924), page 7.
Method of Procedure.

Contract Rebates

In the case of contracts calling for rebates for the purpose of protecting prices, or for any other purpose, such rebates will be handled by the Committee's Executive Secretary, so far as records are concerned. All such rebates will be credited through the General Office of the Corporation to the Operations entitled to them, at the end of each month - not specifically, but as a general sum. This means that each Operation will get the benefit of the Corporation's price and further that the initial billing will be the lowest possible price that any Operation individually is able to obtain. This procedure is considered desirable because to get the benefit of the lowest possible price, objections are sometimes made on the part of suppliers to disclosing that price. While this method will to a certain extent develop an incorrect cost of sales, the errors will be very small and it is preferable to deal in this manner than separately with each individual item.

General Purchasing Committee Minutes, November 30, 1927, page 2.
General Matters.
(e) Participation in Quantity Discount Contracts.

Secretary pointed out that quantity discount contracts were serving to level the prices of items covered by such contracts to the prevailing prices less the anticipated discounts because competitive suppliers either knew or suspected the percentage of quantity discount applying and figured their bids accordingly, or were permitted to meet the contractors price less the anticipated discount and the results are that some contractors formerly holding quantity discount contracts, have stated their inability to renew such contracts because of the lower level of prices established as a result of quantity discount contracts. The matter of our ability to keep quantity discounts confidential (within the Committee) and expect the divisions to support and participate in contracts carrying such confidential discounts, was discussed. Some large suppliers have agreed to offer confidential discounts on the above basis, the discounts to be distributed to divisions at given periods without disclosure of the sources. This procedure is not endorsed by the Committee but the question of gaining any advantage which our volume buying makes available to us is of such importance that it was agreed that the matter be carried over to the next meeting for further consideration.

General Purchasing Committee Minutes, March 28, 1928, pages 1, 2 and 3.

General Matters.

(b) Can We Undertake to Keep General Contract Prices Confidential?

Item e, Page 2 Minutes Meeting November 30, 1927.

It was agreed that prices and terms of all general contracts should be available to the Chief Purchasing Officer of each division. It is established that in his discretion, for the proper functioning of his department, he may disclose such prices to assistants or buyers. Therefore, in view of the number of individuals to whom general contract prices may be disclosed, it is not consistent that suppliers be given to understand that their general contract prices may not be disclosed to outsiders.

It is established that divisions individually can give assurance to suppliers that prices can be held confidential. Through this undoubtedly some divisions, particularly large consumers, secure certain price concessions which may not be available to the smaller divisions.

Notwithstanding the above decision, the necessity for respecting the confidential nature of general contract prices is emphasized, and even where such prices apply to non-exclusive contracts they should not be disclosed in any negotiations for purchases from competitive sources.

Standing Sub-Committee Minutes, December 12, 1929, page 1.

General Matters.

(b) Confidential Prices.

The suggested plan offered as a partial solution of the above much discussed subject considered, but again Committee feels any plan prohibiting our Purchasing Departments from having the full details of a contract is not feasible.

Defendant's Exhibit (GM) No. 161

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EXCERPTS
GENERAL PURCHASING COMMITTEE
RE
DEVELOPMENT OF QUANTITY DISCOUNT IDEA

Minutes of meeting of Purchasing Agents, Electrical Group, General Purchasing Committee, October 29, 1924, page 1.

The Secretary of the General Purchasing Committee outlined the policies and procedure of the Committee, explaining that on account of the diversity of effort it were necessary to form group meetings in order to properly consider the coordination of purchases of items, particularly concerning such groups; that on account of the large quantities of several items appearing on the program purchased individually by members of the group, better prices may not be expected as a result of a coordination of such purchases, but that efforts would be made to arrange with certain suppliers to apply cumulative quantity discounts, i.e. that regardless of the prices paid for the commodities supplied on any orders over a given period, a sliding scale of quantity discounts would be applied at the end of the period and refunds given. This problem confronts the General Purchasing Committee with regards to many of the commodities to be dealt with, and persistent efforts to capitalize our quantity buying along these lines will be made.

Minutes of meeting of Purchasing Agents, Electrical Group, General Purchasing Committee, October 29, 1924, page 4.

The following item was taken up for discussion:

4. Magnet Wire.

Inasmuch as the sources patronized by the three divisions had at least three in common, Belden Manufacturing Company, Duldo Manufacturing Company, and Rome Wire Company, it was believed that this item could be profitably studied to determine, first, whether differentials from base price of copper could be set up applying to same, and, second, whether arrangements could be made with any of the suppliers to have them apply a cumulative quantity discount. Mr. Armstrong was appointed a sub-committee of the General Purchasing Committee to conduct this study and report at the next group meeting as to the possibilities of coordination of purchases.

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Minutes of meeting of Purchasing Agents, Electrical Group, General Purchasing Committee, October 29, 1924, page 4.

The following item was taken up for discussion:

5. Terminal Leads.

All three divisions purchase their requirements from Beldon Manufacturing Company. Due to variable requirements the coordination of purchases was not considered practicable. Delco and Remy will check prices with each other. Matter of establishing cumulative quantity discounts will be taken up.

Minutes of Purchasing Agents - Eastern Group, General Purchasing Committee, November 14, 1924, page 2.

The following item was taken up for discussion:

9. Miscellaneous Electrical Supplies.

Secretary pointed out that with the coming development of large lamp contract it might be possible to interest Western Electric Company to offer us attractive discounts on all items classed under this heading; that this company was well equipped for service on account of large number of branches and warehouses suitably located with respect to divisions; that the possibility of also having cumulative quantity discount applying on such purchases was likely. It was agreed that this development would be constructive and susceptible of co-ordination.

General Purchasing Committee Minutes, November 20, 1924, page 2.

General Matters.

(f) Group Meetings.

Secretary reported that meeting of the Electrical Group was held in Dayton on October 29 and of the Eastern Group in New York on November 14th. Copies of the minutes of all group meetings will be sent to members of the general committee.

A point of general interest elaborated upon at the meeting in Dayton was the possibility of having suppliers agree to some cumulative quantity discount to be applied particularly in cases where there would be no price advantage alone in the co-ordination of purchases. This effort has already borne fruit in some cases and other cases are under negotiation. Wherever possible this provision will be included in general contracts.

General Purchasing Committee Minutes, June 17, 1926, page 2.

General Matters.

(2) Application of Sliding Scale of Quantity Discounts to Purchases of Equipment.

It was agreed that effort could be profitably exerted along this line and members of the committee will submit to the Secretary list of sources of supply of machinery and equipment whose aggregate sales to divisions during the past year were in sufficient volume to warrant attempting to secure quantity discount proposals from them.

Defendant's Exhibit (GM) No. 162

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EXCERPTS
GENERAL PURCHASING COMMITTEE
RE
ILLUSTRATIONS OF QUANTITY DISCOUNT CONTRACTS

General Purchasing Committee Minutes, July 2, 1924, page 3.
Miscellaneous Matters.

(d) 1.- Savings resulting from general contracts on sliding scale of discount basis.
(These would include contracts such as our present fuse contract where the discount increases with each thousand dollars of purchases made and where obviously the lumping of our purchases increases the amount expended.)
The quantity bought by divisions being known the savings can be easily computed.

General Purchasing Committee Minutes, November 20, 1924, page 4.
General Matters.

(n) Aluminum.
It was considered desirable to continue our policy of dealing with the Aluminum Company of America. The matter of cumulative quantity discounts will be discussed with this company.

Standing Sub-Committee Minutes, December 12, 1924, page 2.
General Contract Proposals Considered.

(h) Motors.
While there are in existence several requirements contracts for special makes of motors it is believed that until a preferential list is set up by the Works Engineers Committee for the guidance of divisions in purchasing motors

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a small percentage, on account of cumulative quantity features, can be saved by having requirements' contracts for those makes now being purchased by divisions.
General contract for General Motors' requirements of The Ideal Electric and Manufacturing Company's makes of motors authorized for the year of 1925. General contract for General Motors' requirements of the Wagner Electric Corporation's makes of motors and transformers authorized for the year 1925.

General Purchasing Committee Minutes, June 24, 1925, page 3.
General Matters.
(g) Pyroxylin Finishes.
Secretary advised that the duPont Company had offered for a period of one year beginning July 1st, 1925, prices based on a sliding scale of quantity discounts, the maximum being a discount of 12% on business over $700,000.00 placed in one quarter of a calendar year. On the net amount of the invoice 1% cash discount is allowed. Prices include deliveries to all points of Duco in 5 gallon cans, and Thinner in drums. In order to secure the maximum discounts it will be necessary to combine our purchases with those of Fisher Body Corporation. Fisher Body will be requested to participate in a contract.

Standing Sub-Committee Minutes, September 23, 1925, page 2.
General Matters.
(e) Steel Tools.
In considering Illinois Tool Works sliding scale of quantity discounts offered on purchases of cutters, hobs, reamers, etc., it was agreed that unless the scale of quantities was lowered the proposition is not worthy of consideration.

General Purchasing Committee Minutes, September 24, 1925, page 2.
General Matters.
(e) Consideration of Alemite-Zerk General Contract Proposal.
This proposal which offers to General Motors on a contract for General Motors' requirements of car lubricating systems a quantity discount of 5% on purchases up to $500,000.00 per year, and 7½% on purchases in excess of $500,000.00 per year, with a 1% additional cash discount,

was considered. It was agreed that if Alemite-Zerk would offer these same terms for 75% or more of General Motors requirements of lubricating fittings, exclusive of centralized chassis lubricating equipment, that a contract would be authorized.

Standing Sub-Committee Minutes, June 17, 1926, page 1.
General Matters.
(b) General Contract for Development.
Secretary was authorized to negotiate sliding scale of quantity discount contract with Bullard Machine Tool Company for General Motors requirements of their makes of tools.

Standing Sub-Committee Minutes, July 23, 1926, page 1.
General Contracts Considered.
(c) Motor and Control Equipment. - Fairbanks Morse & Co.
It was agreed that it were inadvisable to increase the number of requirements contracts for motor and control equipment as the contracts in existence with Cutler-Hammer Mfg. Co., General Electric Company, Westinghouse Electric & Mfg. Co. offer quantity discounts and further contracts might tend to split participation to an extent that would materially reduce quantity discount savings.

Standing Sub-Committee Minutes, August 12, 1926, page 1.
General Matters.
(b) Summary of Lists of Sources of Machinery and Equipment.
Secretary submitted lists supplied by Car Divisions showing sources of machinery and equipment from whom purchases, by individual divisions, for the year 1925 exceeded $5,000.00, for the purpose of selecting several companies with whom negotiations for supplying equipment on contracts with sliding scale of quantity discounts on total volume of business placed might be carried out.
The committee will determine from the results of these negotiations whether to extend the development of such proposals. The companies designated to be dealt with are -
The Fellows Gear Shaper Company
Cincinnati Milling Machine Company
Landis Tool Company
Norton Company
Potter and Johnson Machine Company

Standing Sub-Committee Minutes, August 12, 1926, page 3.
General Contracts Extended.

(a) Cleveland Graphite Bronze Company. Brief No. 281. Extension of contract for period of one year from January 1, 1927 authorized because this company agreed to increase the sliding scale of quantity discounts beyond the present minimum of 10% for $1,000,000.00 to include 11% for $11,000,000.00, 12% for $12,000,000.00 etc., and to make this new scale retro-active to January 1, 1926. On account of the volume of business done so far this year there will be a substantial cash refund.

Standing Sub-Committee Minutes, September 29, 1926, page 1.
General Matters.

(d) Items for Consideration for Quantity Discount Contracts. After consideration of volume of business done with certain companies it was agreed that development of sliding scale of quantity discount contract proposals would be undertaken with the following concerns.

Eastern Machine Screw Corporation
Trico Products Corporation.

Standing Sub-Committee Minutes, September 29, 1926, page 2.
General Contracts Approved for Re-development.

(b) Burroughs Adding Machines.
Re-develop for Sliding Scale of Quantity Discount for General Motors requirements.

Standing Sub-Committee Minutes, October 12, 1926, page 2.
General Matters.

(h) Cold Drawn Steel.
Representatives of Union Drawn Steel Company were interviewed with a view to establishing a basis for quantity discount contract. Questionnaire on cold steel, requesting names of present sources from whom divisions are buying, lowest base price per pound being paid, the aggregate tonnage, and dollars of purchases, for first nine months of 1926 was authorized.

Standing Sub-Committee Minutes, October 12, 1926, page 3.
General Matters.
(h) Bolts, Nuts, Lag Screws, etc.
For the purpose of approaching suppliers of such items for proposals for quantity discount contract, Secretary was authorized to ascertain from concerns supplying divisions with such items, the aggregate amount of purchases by divisions from them during the nine months ending September 30, 1926.

Standing Sub-Committee Minutes, October 12, 1926, page 3.
General Contracts Authorized.
(a) Files
Quantity discount contract for General Motors requirements of Seller's make of files for one year from November 1, 1926, with Heller Brothers Company of Newark, N.J.

Standing Sub-Committee Minutes, October 12, 1926, page 3.
General Contracts Authorized.
(b) Horton Chucks.
Quantity discount contract for General Motors requirements of Horton Chucks for one year from November 1, 1926 with The E. Horton & Son Company, Windsor Locks, Conn.

Standing Sub-Committee Minutes, October 12, 1926, page 3.
General Contract Proposals Authorized for Development.
(a) Lubricating Systems.
General contract proposals for General Motors requirements of Alemite-Zerk Lubricating fittings as at present used with The Bassick Manufacturing Company for period ending June 30, 1927, with quantity discount provision.

Standing Sub-Committee Minutes, October 12, 1926, page 3.
General Contract Proposals Authorized for Development.
(e) Carbon Tool Steel.
General contract proposals for General Motors requirements of carbon tool steel for one year from November 1, 1926, with quantity discount provision.

Standing Sub-Committee Minutes, November 9, 1926, page 1.
General Matters.
(c) Hospital Supplies.
It was agreed that because of the varied and miscellaneous purchases of drugs and hospital supplies, for the purpose of establishing base prices, quantity discount contract proposals should be developed.

Standing Sub-Committee Minutes, November 9, 1926, page 2.
General Matters.
(h) Shakeproof Lock Washer Company.
This company, a division of the Illinois Tool Works with whom we have a General contract, Brief #311 is supplying their product in increasing volume to General Motors divisions. Development of a quantity discount contract with this company was authorized.

Standing Sub-Committee Minutes, November 9, 1926, page 3.
General Contracts Authorized.
(b) Lubricating Fittings.
Quantity discount contract with Bassick Manufacturing Company for General Motors requirements of Alemite-Zerk Fittings such as we now use, for period from October 1, 1926 to June 30, 1928 provided Executive Committee's approval is obtained.

Standing Sub-Committee Minutes, November 9, 1926, page 3.
General Contracts Authorized.
(c) Durand Steel Lockers, Racks and Shelving.
Quantity discount contract for General Motors requirements of Durand Steel Lockers, Racks and Shelving for period of one year from October 1, 1926.

Standing Sub-Committee Minutes, November 9, 1926, page 3.
General Contracts Authorized.
(d) Monroe Calculating Machines.
Quantity discount contract for General Motors requirements of Monroe Calculating Machines for period of one year retroactive to January 1, 1926, and as of January 1, 1927 the contract will be authorized for extension for one year.

Standing Sub-Committee Minutes, November 9, 1926, page 3.
General Contracts Authorized for Renewal.

(b) Cutters, Reamers, Hobs, Etc. Illinois Tool Works. Brief #311.
Quantity discount contract for General Motors requirements of seller's make for period of one year from January 1, 1927.

Standing Sub-Committee Minutes, November 9, 1926, page 4.
General Contracts Authorized for Renewal.

(e) High Steel Hobs. Barber-Colman Company. Brief #325.
Quantity discount contract for General Motors requirements of seller's make for one year from January 1, 1927.

Standing Sub-Committee Minutes, November 9, 1926, page 4.
General Contracts Authorized for Renewal.

(f) Motors.
Quantity discount contracts for General Motors requirements of sellers' make for one year from January 1, 1927 with the following:
Howell Electric Motors Company - Brief #326.
Westinghouse Electric & Mfg. Co. - Brief #327.
General Electric Company - Brief #328.
Crocker-Wheeler Company - Brief #341
Wagner Electric Corporation - Brief #368.

Standing Sub-Committee Minutes, November 9, 1926, page 4.
General Contracts Authorized for Renewal.

(g) Pyroxylin Finishes and Thinner. E.I. duPont de Nemours & Co. Brief #343.
Quantity discount contract for General Motors requirements of seller's manufacture of pyroxylin finishes and thinner for one year from January 1, 1927.

Standing Sub-Committee Minutes, November 9, 1926, page 4.
General Contracts Authorized for Renewal.

(h) Paint & Varnish Type Materials for Car Painting.
E. I. duPont de Nemours & Co. Brief #344.
Quantity discount contract for General Motors requirements of seller's manufacture of Primer, Fender Enamel, Rubbing Compound, Glazing Putty, Chassis Black, Surfacer, Motor Enamel, Rubber First Coat, Gas Tank Enamel for one year from January 1, 1927.

Standing Sub-Committee Minutes, November 9, 1926, page 4.
General Contracts Authorized for Renewal.

(i) Abrasive Papers and Cloth - Coated. Brief #349.
Quantity discount contracts for General Motors requirements of sellers' make for one year from January 1, 1927 with the following:

American Glue Company
Armour Sand Paper Works of Armour & Co.
Baeder Adamson Company
Herman Behr & Co., Inc.
H. H. Barton & Son Co.
The Carborundum Company
Manning Abrasive Co.
Minnesota Mining & Mfg. Co.
U. S. Sand Paper Company

Standing Sub-Committee Minutes, November 9, 1926, page 4.
General Contracts Authorized for Renewal.

(j) Milling Cutters. Goddard & Goddard Company. Brief #350.
Quantity discount contract for General Motors requirements of sellers' make for one year from January 1, 1927.

Standing Sub-Committee Minutes, November 9, 1926, page 5.
General Contracts Authorized for Renewal.

(m) Transformers. Wagner Electric Corporation. Brief #369.
Quantity discount contract for General Motors requirements of seller's make for one year from January 1, 1927.

Standing Sub-Committee Minutes, November 9, 1926, page 5.
General Contracts Authorized for Renewal.

(p) Files. Cleveland File Company. Brief #390.
Quantity discount contract for General Motors requirements of seller's make for one year from January 1, 1927.

Standing Sub-Committee Minutes, November 9, 1926, page 5.
General Contracts Authorized for Renewal.

(q) Miniature Incandescent Lamps. Tung-Sol Lamp Works. Brief #352.
Quantity discount contract for General Motors requirements of seller's make for one year from January 31, 1927.

Standing Sub-Committee Minutes, November 9, 1926, page 6.
Disposition of Items Covered by Questionnaire.
(d) Cold Drawn Steel.
Annual expenditures for first nine months of 1926 in excess of three and one-half million dollars reported. Quantity discount proposals for one year from January 1, 1927 ordered developed.

Standing Sub-Committee Minutes, December 14, 1926, page 2.
General Matters.
(g) Lubricating Fittings.
Secretary advised that Executive Committee had approved making of quantity discount contract with Bassick-Alemite Company for General Motors requirements of Alemite-Zerk fittings such as we now use, from October 1, 1926 to June 30, 1928.

Standing Sub-Committee Minutes, January 18, 1927, page 2.
General Contracts Authorized.
(c) Self Opening Die Heads, Screw Machine Products, Socket Wrenches, Threading Machines.
Quantity discount contract with the Eastern Machine Screw Corporation for period of one year from January 1, 1927.

Standing Sub-Committee Minutes, January 18, 1927, page 2.
General Contracts Authorized.
(d) Special Reamers.
Quantity discount contract with the Schellenbach Hunt Tool Company for period of one year from January 1, 1927.

Standing Sub-Committee Minutes, January 18, 1927, page 3.
General Contract Proposals Ordered Developed.
(a) Quantity discount for Asbestos Products, Magnesia Pipe Covering, and other materials in the line supplied by such manufacturers.

Standing Sub-Committee Minutes, January 18, 1927, page 3.
General Contract Proposals Ordered Developed.
(b) Inasmuch as Special Questionnaire on Petroleum Products shows that 55% of requirements of such products in territory covered by Standard Oil of Indiana is supplied by this concern, quantity discount proposal ordered secured from them.

Standing Sub-Committee Minutes, February 8, 1927, page 3.
Disposition of Items Reported by Questionnaire.
(a) Hose Clamps. Annual Purchases reported, $132,062.00. Quantity discount contract proposals for General Motors requirements of seller's make with All Steel Company to be developed for one year.

Standing Sub-Committee Minutes, March 15, 1927, page 2.
General Matters.
(d) Factory Trucks, Tractors, Trailers, and Power Units for same. Authority to make two or more quantity discount contracts, for period of one year, subject to source selections by the Sub-committee of Master Mechanics, was granted. Contracts to cover seller's make.

Standing Sub-Committee Minutes, March 15, 1927, page 2.
General Matters.
(f) Precision Gages.
Quantity discount contract proposal from Pratt & Whitney Company covering Hoke design and Swedish design precision blocks was submitted. Before taking action, Secretary was instructed to develop from Johanson Company and Pratt and Whitney Company, the volume of business on precision gages placed with them by General Motors' units in calendar year 1926.

Standing Sub-Committee Minutes, March 15, 1927, page 4.
General Contract Proposals Considered.
(b). Hobs, Gear Cutters, Reamers, Etc.
Quantity discount contract with Michigan Tool Company for seller's make of above items, authorized for period of one year from March 15, 1927.

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Standing Sub-Committee Minutes, March 15, 1927, page 4.
General Contract Proposals Considered.

(e) Aluminum.
Quantity discount contract proposal from Aluminum Company of America carried over pending adjustment of volume scale from 10,000,000 pounds up at 1/2% and 20,000,000 pounds up at additional 1/2% to 7,500,000 pounds up at 1/2% and 15,000,000 pounds up at additional 1/2% and institution of clause providing for decline in prices and making closing date for calculating annual volume that of agreed upon date on which last order may be placed.

Standing Sub-Committee Minutes, March 15, 1927, page 5.
General Contract Proposals Considered.

(g) Marchant Calculating Machines.
Quantity discount contract for General Motors requirements of seller's make for period of one year from January 1, 1927 authorized with Marchant Calculating Machine Company.

Standing Sub-Committee Minutes, April 12, 1927, page 2.
General Matters.

(f) Factory Trucks, Tractors, Trailers, and Power Units for same.
Referring to item (d) page two of minutes of meeting of March 15th, thereis here noted for record purposes, quantity discount contracts approved by Sub-committee of Master Mechanics, for seller's make as follows:

Brief 458 - The Ready-Power Company - 1 year from March 15, 1927 for Gas Electric Industrial Truck Power Plants.
Brief 461 - Mercury Manufacturing Company - 1 year from March 15, 1927 for Industrial Trailers.
Brief 463 - Elwell-Parker Electric Company - 1 year from March 15, 1927 for Electric Industrial Trucks and Tractors.

Standing Sub-Committee Minutes, April 12, 1927, page 3.
General Contract Proposals Ordered Developed.

(a) Pratt and Whitney Precision Gage Blocks including both Hoke and Swedish Design, Standard and Special Gages, Block, Thread, Spline, Taper, etc.
Quantity discount contract for seller's make of General Motors requirements for one year from May 1, 1927 with Pratt & Whitney Company.

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Standing Sub-Committee Minutes, April 12, 1927, page 3.
General Contract Proposals Ordered Developed.

(b) Screw Thread Gages.
Quantity discount contract with John-sons Gage Works for General Motors requirements of sellers make for period of one year from May 1, 1927.

Standing Sub-Committee Minutes, April 12, 1927, page 3.
General Contract Proposals Ordered Developed.

(c) Taps and Gages.
Quantity discount contract with John Bath Company for General Motors requirements of seller's make for period of one year from May 1, 1927, as Greenfield Tap and Die Corporation have declined to renew contract. Brief 362 which expired April 1st.

General Purchasing Committee Minutes, April 12, 1927, page 4.
General Matters.

(i) Aluminum.
General contract proposal from Aluminum Company of America offering in consideration of our large requirements of aluminum, preferential base prices on sheet, molding, ingot, file guides, etc. that we may purchase from them; and in addition a quantity discount of 1/2¢ per pound on purchases between 10,000,000 and 20,000,000 pounds, was considered, and a further quantity discount of 1/2¢ per pound on purchases in excess of 20,000,000 pounds, was considered. Proposal was accepted for period of one year to become effective May 1, 1927. It was further suggested that the Aluminum Company of America be requested to include for participation in this contract the aluminum purchased by suppliers for use in production of General Motors parts.

Standing Sub-Committee Minutes, June 28, 1927, page 3.
General Contracts Authorized.

(b) Adjustable Thread Snap Gages, Setting Plugs and Gage Fixtures.
Quantity discount contract for General Motors requirements of seller's make for period of one year from July 1, 1927 with John-sons Gage Works.

Standing Sub-Committee Minutes, June 28, 1927, page 4.
General Contracts Authorized.

(h) Quenching Machines.
Quantity discount contract for General Motors requirements of sellers make for one year from June 1, 1927 at prices current at time of purchase, with Gogan Machine & Foundry Company, Inc.

Standing Sub-Committee Minutes, August 9, 1927, page 2.
General Contracts Authorized.

(a) Counterbores.
Quantity discount contract with Eclipse Interchangeable Counterbore Company for General Motors requirements of sellers make for period of one year from September 1, 1927.

Standing Sub-Committee Minutes, August 9, 1927, page 2.
General Contracts Authorized.

(b) Cut Thread Taps.
Quantity discount contract with Threadwell Tool Company for General Motors requirements of sellers make for period of one year from September 1, 1927.

Standing Sub-Committee Minutes, August 9, 1927, page 2.
General Contracts Authorized.

(d) Heavy Duty Shop, Road and Interplant Trailers.
Quantity discount contract with The Whitehead & Kales Company for General Motors requirements of sellers make for period of one year from September 1, 1927.

Standing Sub-Committee Minutes, August 9, 1927, page 3.
General Contracts Authorized.

(h) Rear View Mirrors
Quantity discount contract with Trico Products Company for General Motors requirements of this item for period July 1, 1927 to June 30, 1928.

Standing Sub-Committee Minutes, August 9, 1927, page 3.
General Contract Proposals Ordered Developed.

(c) Carburizing Boxes and Pots. (Quantity discount proposals)
(d) Semi-Finished Cap and Set Screws. (Quantity discount proposals)
(e) Friction Tape.
(f) Lock Washers. (Quantity discount proposals with Reliance Mfg. Co.)
(g) Locks Used on Cars. (Negotiate with Briggs & Stratton for quantity discount contract on all locks sold direct to divisions or through their suppliers for our products.)
(h) Armstrong Cork & Insulation Company. (This company having offered Cadillac quantity discount schedule on cork covering, cork lagging, etc. Secretary was instructed to negotiate with this company to determine whether they would apply quantity discount schedule to volume of all purchases made by General Motors divisions.)

General Purchasing Committee Minutes, August 16, 1927, page 3.
General Matters.

(h) Cold Drawn Steel.
This item was again considered with a view to determining the desirability of making a quantity discount contract for 50% or more of our requirements; and the effect of such a contract on the cold drawn steel market.
Secretary was instructed to canvass divisions to ascertain what portion of their requirements they would be willing to divert to Jones and Laughlin from their present sources. Production Departments to be consulted when necessary in regard to quality of product of this of this supplier, and any special requirements.
Mr. Pratt called attention to substitution of hot rolled for cold drawn steel at Hyatt, pointing out that the removal of greater thicknesses with consequent higher grinding costs would be more than offset by the lower costs of hot rolled, and suggested that Secretary refer this question to the Works Managers Committee.

Standing Sub-Committee Minutes, October 11, 1927, page 1.
General Contracts Authorized.

(a) Niagara Washers.
Quantity discount contract with G.S. Blakeslee & Co. for General Motors requirements of Niagara Washers for period of one year from November 1, 1927.

Standing Sub-Committee Minutes, October 11, 1927, page 1.
General Contracts Authorized.

(c) Wire Wheels.
Quantity discount contract with [illegible] Wire Wheel Corporation of America for Genera[illegible]rs requirements of sellers make, for pe[illegible] ten months ending June 30, 1928, contract [illegible] retroactive to September 1, 1927.

Standing Sub-Committee Minutes, October 11, 1927, page 2.
General Contracts Authorized.

(e) Locks Used on Cars.
Quantity discount contract with Briggs & Stratton Corporation for General Motors requirements of locks used on cars, volume to include sales to the Oakes Company, The Hershey Company, and any other suppliers of General Motors, for period of nine months ending June 30, 1928. (Discount scale to be prorated to nine months basis.)

Standing Sub-Committee Minutes, October 11, 1927, page 4.
General Contracts Ordered Redeveloped.

(c) Brief 427. Tools, Electric Drills, Grinders & Accessories. Develop quantity discount contract proposals with Black & Decker Company, Ingersoll Rand, and Chicago Pneumatic Tool Company.

Standing Sub-Committee Munutes, November 8, 1927, page 1.
General Contracts Authorized.

(b) Nice Ball Bearings.
Quantity discount contract with Nice Ball Bearing Company for General Motors requirements of seller's make for one year from January 1, 1928.

Standing Sub-Committee Minutes, November 8, 1927, page 1.
General Contracts Authorized.

(c) Cap and Set Screws - Milled from Bar.
Quantity discount contract with Automatic Products Company for a portion of General Motors requirements for one year from January 1, 1928.

Standing Sub-Committee Minutes, November 8, 1927, page 1.
General Contracts Authorized.

(d) Friction Tape.
General contract for 80% of General Motors requirements of General Motors Specification G.M. 658-M with the Dryden Rubber Company for one year from January 1, 1928. This contract also includes sliding scale of quantity discount provision.

Standing Sub-Committee Minutes, January 17, 1928, page 3.
General Contracts Authorized.

(b) Pyroxylin Finishes Including Duco and Duco Thinner.
(Item 4-c, page 3, Minutes Meeting December 8, 1927.)
Quantity discount contract for General Motors requirements of Seller's make for one year from January 1, 1928 with E.I.duPont deNemours and Company.

Standing Sub-Committee Minutes, January 17, 1928, page 3.
General Contracts Authorized.

(c) Primers and Surfacers.
(Item 4-d, page 3 Minutes Meeting December 8, 1927.)
Quantity discount contract for General Motors requirements of seller's make for one year from January 1, 1928 with E.I.duPont deNemours and Company.

Standing Sub-Committee Minutes, January 17, 1928, page 3..
General Contracts Authorized.

(f) Electric Drills, Tools, Grinders and Accessories.
General contract for General Motors requirements of Seller's make of such tools and accessories and repair parts used in connection with repair and maintenance thereof for one year from January 1, 1928 with Black & Decker Manufacturing Company.
Quantity discount contract for General Motors requirements of seller's make of the above items for one year from January 1, 1928 with Chicago Pneumatic Tool Company.

Standing Sub-Committee Minutes, February 14, 1928, page 3.
General Contracts Authorized.
(a) Dial Indicators.
Quantity discount contract for General Motors requirements of sellers make for one year from March 1, 1928 with the Federal Products Corporation.

Standing Sub-Committee Minutes, February 14, 1928, page 3.
General Contracts Authorized.
(c) Hose Clamps.
Quantity discount contract for General Motors requirements of sellers make for one year from January 1, 1928 with Federal Tin Company.

Standing Sub-Committee Minutes, February 14, 1928, page 3.
General Contracts Authorized.
(d) Drill Jig Bushings.
Quantity discount contract for General Motors requirements of sellers make for one year from March 1, 1928 with Ex-Cell-O Tool and Manufacturing Company.

Standing Sub-Committee Minutes, March 13, 1928, page 3.
General Contracts Authorized.
(b) Electric Industrial Trucks and Tractors.
(Brief 469 - Renewal)
Quantity discount contract with Automatic Transportation Inc. for General Motors requirements of sellers make for one year from March 15, 1928.

Standing Sub-Committee Minutes, March 13, 1928, page 3.
General Contracts Authorized.
(b) Electric Industrial Trucks and Tractors.
(Brief 463 - Renewal)
Quantity discount contract with Elwell-Parker Electric Company for General Motors requirements of sellers make for one year from March 15, 1928.

Standing Sub-Committee Minutes, March 13, 1928, page 3.
General Contracts Authorized.
(c) Gas Electric Industrial Truck Power Plants.
(Brief 458 - Renewal)
Quantity discount contract with Ready Power Company for General Motors requirements of sellers make for one year from March 15, 1928.

Standing Sub-Committee Minutes, March 13, 1928, page 3.
General Contracts Authorized.

(d) Electrolytic Manufacturing Sets.
Special discount contract for General Motors requirements of sellers make with Chandeysson Electric Company, St. Louis, for one year from April 2, 1928.

Standing Sub-Committee Minutes, March 13, 1928, page 3.
General Contracts Authorized.

(e) Motors.
Quantity General contract for General Motors requirements of Sellers make with Reliance Electric & Engineering Company for one year from March 15, 1928.

General Purchasing Committee Minutes, March 28, 1928, page 3.
General Matters.

(i) Alemite-Zerk Lubricating Fittings, Brief No. 414.
It was agreed that the quantity discount contract covering the above items should be renewed with The Bassick Manufacturing Company for the period of one year from June 30, 1928.

Standing Sub-Committee Minutes, April 11, 1928, page 2.
General Contracts Authorized.

(f) Quantity discount contract for General Motors requirements of Sellers make of Adjustable Thread Snap Gages, Setting Plugs and Gage Fixtures for one year from June 30, 1928 with John-sons Gage Works.

Standing Sub-Committee Minutes, April 11, 1928, page 2.
General Contracts Authorized.

(g) Quantity discount contract for General Motors requirements of Sellers make of Locks and Parts for one year from June 30, 1928 with Briggs & Stratton Corporation.

Standing Sub-Committee Minutes, April 11, 1928, page 2.
General Contracts Authorized.

(h) Quantity discount contract for a portion of General Motors requirements of Sellers manufacture of Lockwashers in accordance with certain General Motors specifications to be listed in contract with Reliance Manufacturing Co. and The Mansfield Lockwasher Co. for period of one year from June 30, 1928.

Standing Sub-Committee Minutes, June 12, 1928, page 3.
General Contracts Authorized.
(g) Industrial Trailers.
Quantity discount contract with Mercury Mfg. Company for General Motors requirements of Seller's make for one year from March 16, 1928.

Standing Sub-Committee Minutes, June 12, 1928, page 3.
General Contracts Authorized.
(i) Automobile Locks and Parts.
Quantity discount contract with Briggs and Stratton Corporation for General Motors requirements of seller's make for one year from July 1, 1928.

Standing Sub-Committee Minutes, June 12, 1928, page 3.
General Contracts Authorized.
(j) Wire Wheels.
Renew quantity discount contract with Wire Wheel Corporation of America for General Motors requirements of Seller's make for one year from July 1, 1928.

Standing Sub-Committee Minutes, July 10, 1928, page 2.
Quantity Discount Contracts Authorized.

Axle Shafts, "I" Beams, Propeller Shafts, Gear Shift Levers, etc.
Witherow Steel Corporation for Seller's make for one year from July 1, 1928.
(Renewal of Brief #516)

Standing Sub-Committee Minutes, August 15, 1928, page 2.
(General Contracts Authorized.
(a) Plating Generators and Motor Generator Sets.
Chandeysson Electric Co., Brief #567 ordered cancelled. Quantity discount contract for General Motors requirements of Seller's make, effective August 1st, 1928, but dated October 1st, 1928, for one year from that date, authorized with same company.

Standing Sub-Committee Minutes, October 9, 1928, page 3.
General Contracts Authorized.
(a) "SABECO" Bearing Metal.
Quantity discount contract with Fredericksen Company for General Motors requirements of this material for one year from November 1, 1928.

Standing Sub-Committee Minutes, October 9, 1928, page 3.
General Contracts Authorized.
(c) Interchangeable Counterbores.
Quantity discount contract with Eclipse Interchangeable Counterbore Co. for General Motors' requirements of sellers make for one year from November 1, 1928.

Standing Sub-Committee Minutes, December 11, 1928, page 1.
General Matters.
(f) John-Sons Gage Contract - Brief 584.
Supplier has interpreted contract to mean 10% on Setting Plugs, 15% on Adj. Thread Snap Gages, and 20% on Gage Vises with an additional 5% when volume reached $10,500 or 10% if volume reached $20,000 whereas contract reads 15% on face of all invoices with additional discounts for volume noted above. Recommended we insist on contract items even though it becomes necessary to adjust invoices rendered to date.

Standing Sub-Committee Minutes, December 11, 1928, page 4.
General Contracts Authorized.
(b) Hose Clamps.
Quantity discount with Federal Tin Company for General Motors' requirements of Seller's make for one year.

Standing Sub-Committee Minutes, December 11, 1928, page 4.
General Contracts Authorized by Letter.
(b) Pyroxylin Finishes.
Quantity discount contract with the E. I. du Pont de Nemours & Company for General Motors' requirements of Seller's make for one year from Jan. 1, 1929.

Standing Sub-Committee Minutes, February 12, 1929, page 2.
General Matters.
(h) Ex-Cell-O Tool & Mfg. Co.
Contract renewal authorized at November meeting; this supplier willing to renew agreement on the same price basis and the same sliding scale of discounts but only for ten months from March 1st, 1929 and excluding from the volume rebate the grinding spindle business. Proposal accepted.

Standing Sub-Committee Minutes, July 23, 1929, page 1.
General Contracts Authorized.
(a) Automobile Locks and Parts.
Quantity discount contract with Briggs & Stratton for General Motors' requirements of Seller's make for one year from July 1, 1929; effort to be made to lower each step in volume schedule submitted $100,000.00 with no change in scale of discounts.

Standing Sub-Committee Minutes, July 23, 1929, page 1.
General Contracts Authorized.
(b) Axle Shafts, I Beams, Propeller Shafts, Gear Shift Levers, etc.
Quantity discount contract with Witherow Steel Corporation for General Motors' requirements of Seller's make for one year from July 1, 1929.

Standing Sub-Committee Minutes, July 23, 1929, page 2.
General Contracts Authorized.
(c) Products of L. H. Gilmer Co. - Anti-squeak, Top Webbing, Fan Belts, etc.
Quantity discount contract with L. H. Gilmer Company for General Motors' requirements of Seller's make for one year providing a more favorable volume discount schedule is allowed.

Standing Sub-Committee Minutes, March 13, 1930, page 2.
General Contracts Authorized.
(b) Milling Cutters, Hobs and Tools.
Quantity discount contract with National Twist Drill & Tool Co. for one year for General Motors requirements of Seller's makes.

Standing Sub-Committee Minutes, March 13, 1930, page 2.
General Contracts Authorized.
(d) Elwell-Parker Trucks.
General Motors' requirements of Seller's make with Elwell-Parker Electric Co. for one year with the recommendation Seller give as preferential discount on invoices equivalent to that earned on the past year's quantity discount arrangement.

Standing Sub-Committee Minutes, June 18, 1930, page
General Contracts Authorized.
(b) Locks & Parts - Briggs & Stratton.
Quantity Discount Contract authorized with Briggs & Stratton for one year from July 1st, 1930, providing volume discount is allowed on purchases made by Fox Gun Co.

Standing Sub-Committee Minutes, June 18, 1930, page 2.
General Contracts Authorized.
(g) Alemite Fittings.
Quantity discount contract authorized with the Alemite Co. for one year from July 1st, 1930.

Standing Sub-Committee Minutes, October 21, 1930, page 2.
General Contracts Authorized Renewed for One Year.
(h) " " 739 - Milling Cutters - Goddard & Goddard - providing volume discount starts at $75,000.00

Standing Sub-Committee Minutes, October 21, 1930, page 2.
General Contracts Authorized Renewed for One Year.
(i) " " 749 - Drill Jig Bushings - Ex-Cell-O Tool - effort to be made to lower volume discount brackets.

Standing Sub-Committee Minutes, October 21, 1930, page 3.
General Contracts Authorized Renewed for One Year.
(l) " " 754 - Tools & Equipment - Michigan Tool Co. - effort to be made to lower volume discount brackets.

Standing Sub-Committee Minutes, May 12, 1931, page 2.
General Contracts Authorized.
(c) Leeds & Northrup.
Volume discount plan offered by this company accepted. Full details of this plan will be the subject of general letter to all purchasing agents at a later date.

Standing Sub-Committee Minutes, June 16, 1931, page 2.
General Contracts Authorized.
(b) Alemite Fittings.
Volume discount Contract for one year from July 1st authorized with Alemite Corp'n.

Standing Sub-Committee Minutes, June 16, 1931, page 2.
General Contract Proposals Considered.
(a) Locks & Parts.
Volume discount proposals from Briggs & Stratton and Yale & Towne Companies considered. Recommended that prices on locks quoted divisions direct be reviewed before making a decision on Volume Discount offer.

E

Defendant's Exhibit (GM) No. 163

7143

EXCERPTS
GENERAL PURCHASING COMMITTEE
RE
ENCOURAGING PARTICIPATION IN QUANTITY DISCOUNT CONTRACTS

Standing Sub-Committee Minutes, November 9, 1925, page 1.
General Matters.

(b) Resume of Survey of General Contract Participation by Some of the Divisions.
Secretary reported that representatives from Purchase Contract Investigation Section had called upon - A. C. Spark, Armstrong Spring, Cadillac Motor Car, Chevrolet-Bay City, Chevrolet-Cincinnati, Chevrolet-Gear and Axle, Chevrolet-Toledo, Dayton Engineering Laboratories, Delco-Light, General Motors Truck, Inland Manufacturing Co., Jaxon Steel Products, Muncie Products, Oakland Motor Car Company, Olds Motor Works, Remy Electric Co., Saginaw Products divisions, to check up the extent of participation in general contracts, and to receive suggestions and criticisms for use in renewing these contracts, and in the development of further general contracts. The results of the survey indicated that in general participation was satisfactory, and co-operation whole-hearted. A few misunderstandings were cleared up. These visits will be made at regular intervals as we find the contact most helpful.

Standing Sub-Committee Minutes, August 12, 1926, page 1.
General Matters.

(a) Report of Sub-committee on Office Furniture.
After analysis and comparison of general contract proposals on office furniture submitted by the leading distributors of such items, the Sub-committee recommended that a general contract for General Motors requirements of such office furniture and equipment as supplied by Shaw-Walker Company be awarded to that company for period of one year from Sept. 1, 1926. Contract authorized. The committee records the fact that participation in this contract by all divisions, branches, and other units of the Corporation will lead to substantial economies not only because the net prices are very low, but because there is a cumulative quantity discount provision in the contract.
Secretary was instructed to address a letter to the Purchasing Agents of all divisions urging their support and participation in this contract.

Standing Sub-Committee Minutes, March 15, 1927, page 3.
General Matters.
(l) Participation in Quantity Discount Contracts.
To keep Purchasing Agents informed of participation in quantity discount contracts so as to insure our getting the maximum possible discounts, committee ordered that there be published in the minutes of the Standing Sub-committee the participation in such contracts by quarters of the calendar year.

Standing Sub-Committee Minutes, August 9, 1927, page 1.
General Matters.
(c) Form for Periodically Reporting Performance of Quantity Discount Contracts.
Such a form was considered, approved and ordered printed for use in reporting by divisions, participation in quantity discount contracts.

Standing Sub-Committee Minutes, March 13, 1928, page 1.
General Matters.
(d) Participation in Air Reduction Sales Contract.
Brief 512.
Average monthly volume for five months from September 1, 1927 was below 600,000 cubic feet required to obtain Schedule B prices. Schedule C prices mean a further reduction beyond Schedule B prices of 5¢ per 100 cubic feet, and if average monthly purchase of 700,000 cubic feet a month of Oxygen is made there will be a reduction of 5¢ per 100 cubic feet on all Acetylene purchased during the period of the contract.
It is noted that Fisher Body is not participating at all; A.C. Spark Plug Company not since October 7, 1927; Chevrolet-Flint for only a portion of its requirements.

Standing Sub-Committee Minutes, March 13, 1928, page 2.
General Matters.
(g) Contract Shaw-Walker. Brief 509.
In original proposal contractors set up three grades of office furniture, and it appears that proposals to inquiring Divisions have consisted generally of Grade 3 prices. Frequently units desire to purchase a cheaper grade of furniture than Grade 3, and it is expected that they will advise contractor of this fact so that he will

be permitted to name prices on grades of furniture that will compete with those grades quoted on by competitors. Divisions are urged to co-operate with contractor as any furniture business placed outside the contract reduces the amount of the quantity discount, and it is understood that contractor is in position to compete with any suppliers on any grades of furniture and office equipment.

Standing Sub-Committee Minutes, March 13, 1928, page 4.
General Contracts Ordered Renewed.

(d) Brief 472. Machine Tools and Equipment. Bullard Machine Tool Company for one year from June 1, 1928. (Chevrolet participation necessary in order to insure discount which was lost to the other General Motors units on existing contract account of Chevrolet non-participation.)

Standing Sub-Committee Minutes, August 15, 1928, page 1.
General Matters.

(d) Air Reduction Sales Co.
Purchase Contract Section reported that for 11 months ending July 31, 1928, average monthly oxygen consumption 664,812 cu.ft. The old contract would have expired August 31st and were the average monthly consumption during the 12 months ending that date 700,000 cu.ft., we would have received a rebate of about $1,500 on acetylene consumed during the 8 months of the old contract cancelled April 30th. Secretary was instructed to advise Chevrolet - Flint, and Fisher Body of the savings to be effected through average monthly consumption of 700,000 cu.ft., requesting their cooperation in effecting this saving.

Standing Sub-Committee Minutes, October 9, 1928, page 2.
General Matters.

(n) Performance of Quantity Discount Contracts.
Agreed that 90 days prior to the expiration of quantity discount contracts Purchase Contract Investigation Section will, by letter, advise all divisions of the discount earned to that time, drawing attention to additional volume of business required to earn further discounts, all with a view to gaining the maximum possible quantity discount under the contract.

Standing Sub-Committee Minutes, December 11, 1928, page 3.

General Matters.

(w) Automatic Products Co. Contract - Brief [illegible]. Letter calling attention to participation under above contract noted. Purchases to date are at the annual rate of $1,250,000., which will earn us a rebate of about $25,000. Had an additional $550,000 been placed, the additional rebate would have been $65,000. - equivalent to about 12% reduction on this amount of business.

E

Exhibit (GM) No. 164

7147

EXCERPTS
GENERAL PURCHASING COMMITTEE
RE
MULTIPLE PRODUCT QUANTITY DISCOUNT CONTRACTS
(COMBINING SEVERAL OR ALL OF SUPPLIER'S PRODUCTS)

Standing Sub-Committee Minutes, July 23, 1926, page 2.
General Matters.

(d) Paints for Maintenance Uses.
This item rejected for questionnaire at 27th meeting on July 13th was again presented to Sub-committee because of certain savings to be afforded by making general contract. It was agreed that a plan may be worked out with the du Pont Company under which they would offer a sliding scale of quantity discounts applying to all items purchased by General Motors divisions from the du Pont Company. Secretary was instructed to invite Mr. W. P. Allen of the du Pont Company to meet with the Standing Sub-committee at its meeting to be held during the week of August 9th.

Standing Sub-Committee Minutes, July 23, 1926, page 2.
General Matters.

(f) Standard Oil Company.
It was suggested that representative of Standard Oil Company be requested to appear before the Sub-committee at its meeting to be held during the week of August 9th, to consider the volume of purchases by General Motors divisions with a view to working up a sliding scale of quantity discount proposal.

Standing Sub-Committee Minutes, August 12, 1926, page 1.
General Matters.

(a) Report of Sub-committee on Office Furniture.
After analysis and comparison of general contract proposals on office furniture submitted by the leading distributors of such items, the Sub-committee recommended that a general contract for General Motors requirements of such office furniture and equipment as supplied by Shaw-Walker Company be awarded to that company for period of one year from Sept. 1, 1926. Contract

authorized. The committee records the fact that participation in this contract by all divisions, branches, and other units of the Corporation will lead to substantial economies not only because the net prices are very low, but because there is a cumulative quantity discount provision in the contract.
Secretary was instructed to address a letter to the Purchasing Agents of all divisions urging their support and participation in this contract.

Standing Sub-Committee Meeting, August 12, 1926, page 2.
General Matters.
(d) Application of Quantity Discount Schedule to Combined Purchases of Duco, Thinner, and Other Items Purchased from du Pont Company.
Secretary presented statement showing volume of business done with the du Pont Company and additional volume of business which they could supply, compiled from statements submitted by divisions.
Mr. W. P. Allen of the du Pont Company was invited to discuss with the committee the feasibility of an arrangement whereby a sliding scale of quantity Belts discounts could be applied to the aggregate purchases made from the du Pont Company. This would include Duco, Thinner, Fabrikoid, Rubber Covered Fabrics, Pyralin, Paints for Maintenance Purposes, etc.
After thorough discussion of all phases of the matter, Mr. Allen agreed that such an arrangement is feasible, and that he would work out a tentative proposal for submission to the committee.

Standing Sub-Committee Minutes, September 29, 1926, page 1.
General Matters.
(c) Application of Quantity Discount Schedule to Combined Purchases of Items from Standard Oil Company of Indiana.
Representatives of Standard Oil Company were received by the Subcommittee, and after thorough discussion of the merits of the matter, and an expressed interest on the part of the Standard Oil representatives, it was agreed to issue a questionnaire to those divisions that might be served by Standard Oil Company of Indiana, for the purpose of developing the consumption in gallons and pounds by classifications of Petroleum Products for the first six months of 1926. Upon receipt and compilation of this data a further joint meeting will be held.

Standing Sub-Committee Minutes, October 12, 1926, page 3.
General Contract Proposals Authorized for Development.

(d) Truscon Products.
General contract proposals for General Motors requirements of Products supplied by Truscon Steel Company, with quantity discount provision, for one year from November 1, 1926.

Standing Sub-Committee Minutes, November 9, 1926, page 1.
General Matters.

(b) Cleveland Graphite Bronze Company.
It has been arranged with the Cleveland Graphite Bronze Company, in addition to the 12% quantity discount from face of invoices effective October 15, 1926 and retroactive to include all business done with them since January 1, 1926, to apply additional discounts as follows during year 1927.

Applying the base discount of 12% to any amount of purchases there will be a further discount of 1% for each additional $100,000.00 of business over and above $1,200,000 e.g. on $1,300,000 worth of business there would be a quantity discount of $156,000 plus $1,000.

Note: Original contract to which above revision applies referred to in August 12, 1926, minutes, page 3, as follows:
"(a) Cleveland Graphite Bronze Company. Brief No. 281. Extension of contract for period of one year from January 1, 1927 authorized because this company agreed to increase the sliding scale of quantity discounts beyond the present minimum of 10% for $1,000,000.00 to include 11% for $11,000,000.00, 12% for $12,000,000.00 etc., and to make this new scale retroactive to January 1, 1926. On account of the volume of business done so far this year there will be a substantial cash refund."

Standing Sub-Committee Minutes, November 9, 1926, page 3.
General Contract Authorized by Letter, Confirmation for Minutes.

(a) Machinery and Equipment.
Quantity discount with Potter & Johnson Machine Company for General Motors requirements of seller's manufacture of machines and tools for period of one year from October 10, 1926. Brief No. 405.

Standing Sub-Committee Minutes, January 18, 1927, page 2.
General Contracts Authorized.

(b) Carriage Bolts, Clevis Pins, Hexagon Head Bolts, Hub Bolts, Lag Screws, Machine Bolts, Rivets, Semi-finished Nuts, Shackle Bolts, Step Bolts, Stove Bolts.
Quantity discount contracts with the following concerns for such of the above line of items and any others that they supply, for one year from January 1, 1927.

Russell Burdsall & Ward Company.
Lamson & Sessions Company - The Kirk Latty Co.
Lake Erie Bolt & Nut Company.
Buffalo Bolt Company.

Reports showing participation in these contracts are to be secured monthly from suppliers as guides to future participation, so that the maximum advantages of the contracts may be secured.

Standing Sub-Committee Minutes, February 8, 1927, page 2.
General Contracts Authorized.

(b) Rand Kardex Service Corporation Products.
Quantity discount contract for General Motors requirements of seller's products for period of one year from February 15, 1927.

Standing Sub-Committee Minutes, March 15, 1927, page 4.
General Contract Proposals Considered.

(f) Petroleum Products.
Action deferred on quantity discount contract proposal from Standard Oil Company of Indiana for requirements of petroleum products of those divisions reached by them, pending analysis and study. In event contract is made, terms are retroactive to March 15, 1927. The Standard Oil Company agrees to extend existing Divisional contracts with them pending making of QD contract, in which event, terms of QD contract are retroactive to March 15th.

Secretary instructed to write divisions eligible to participation requesting that they make no contract for petroleum products with any other suppliers pending final action by Committee.

Standing Sub-Committee Minutes, September 30, 1927, page 3.
General Contracts Authorized.
(b) Remington Rand, Inc. Products.
General contract for General Motors requirements of the following items such as we may purchase from them on which a scale of quantity discounts also apply.

Remington Typewriters
Noiseless Typewriters
Portable Typewriters
Remington Accounting Machines
Electric Typewriters
Supplies for Remington Typewriters and Accounting Machines
Line-A-Time
Products of Dalton Adding Machine Company
Powers Accounting Machines
Powers Accounting Machine Cards
Stock Baker-Vawter and Kalamazoo Binders
Stock Baker-Vawter and Kalamazoo Sheets and Forms
Kardex Cabinets and Equipment
Kardex Cards
Spool-O-Wire Fastener and Extra Spools of Wire

Standing Sub-Committee Minutes, October 11, 1927, page 1.
General Contracts Authorized.
(d) Woodworking Machinery.
Quantity discount contract with J. Lee Hackett, 3-123 General Motors Building, Detroit, Michigan for General Motors requirements of combined purchases of woodworking machinery as manufactured by the principals represented by him as listed on following page, for period of one year from November 1, 1927.

Adjustable Clamp Co.	Chicago, Ill.
American Swiss Magneto Co. (Toledo Glue Apr. Div.)	Toledo, Ohio
Beach Mfg. Co.	Montrose, Pa.
Bell Machine Co.	Oshkosh, Wis.
Nels J. Billstrom	Rockford, Ill.
Cincinnati Electrical Tool Co.	Cincinnati, Ohio
Crescent Machine Co.	Leetonia, Ohio
Alexander Dodds Co. Inc.	Grand Rapids, Mich.
Frank Diehl	Wabash, Ind.
Gallmeyer & Livingston Co.	Grand Rarids, Mich.
Greenlee Bros. & Co.	Rockford, Ill.
Jackson-Church Co.	Saginaw, Mich.
Jones-Superior Machine Co.	Chicago, Ill.
Mattison Machine Works	Rockford, Ill.
Machinery Co. of America	Big Rapids, Mich.
New Britain Machine Co.	New Britain, Conn.
Northfield Machine & Mfg. Co.	Northfield, Minn.
Onsrud Machine Works	Chicago, Ill.
Pettingell Machine Co.	Amesbury, Mass.
C. O. Porter Machinery Co.	Grand Rapids, Mich.
Pringle & Brodie Machinery Co.	Chicago, Ill.
Redin-Eckstrom Co.	Rockford, Ill.
Salstrom Carving Machine Co.	Chicago, Ill.
Sheboygan Machine Co.	Sheboygan, Wis.
Tucker & Dorsey Mfg. Co. (Factory trucks)	Indianapolis, Ind.
Wardwell Mfg. Co.	Cleveland, Ohio

Standing Sub-Committee Minutes, October 11, 1927, page 2.
General Contracts Authorized.

(f) Witherow Steel Corporation.
Quantity discount contract for General Motors requirements of such products including rolled rear axle shafts, gear shift levers, front axle I beams, and any other products of their make as are purchased from them, for period of nine months ending June 30, 1928. (Discount scale to be prorated to nine months basis.)

Standing Sub-Committee Minutes, October 11, 1927, page 3.
General Contracts Ordered Renewed for one year from Expiration Date.

(o) Brief 467. Gasoline Tank Caps. Easy-On-Cap-Company. (New contract to include all of seller's products.)

Standing Sub-Committee Minutes, November 8, 1927, page 2.
General Contracts Authorized.

(e) Lock Washers.
Quantity discount contract with Reliance Manufacturing Company for a portion of General Motors requirements for six months from January 1, 1928. The volume to include all business done with the Reliance Manufacturing Company and the Mansfield Lock Washer Company.

Standing Sub-Committee Minutes, January 17, 1928, page 3.
General Contracts Authorized.

(a) Cutters, Hobs, Reamers, etc.
Quantity discount contract for General Motors requirements of seller's manufacture of such items for one year from January 1, 1928 with Illinois Tool Works.

Standing Sub-Committee Minutes, August 15, 1928, page 2.
General Contracts Authorized.

(d) Punch Press Machinery and Equipment.
Quantity discount contract for machinery and equipment as manufactured by the Hamilton Press and Machinery Co., and the V. & O. Press Co., renewed for one year from September 1st, 1928.

Standing Sub-Committee Minutes, September 13, 1928, page 1.
General Contracts Authorized.

(a) Office Furniture (Wood), Filing Equipment (Steel and Wood), Filing Supplies, Systems, etc.
After very thorough discussion of the proposals submitted by the Shaw-Walker Company and Remington-Rand Company, and interviewing representatives from these two concerns, a general contract for General Motors requirements of the above items as handled and merchandised by the Seller was awarded to the Shaw-Walker Company for one year from October 1, 1928, with option of renewal for one year to be exercised by July 1, 1929.

Standing Sub-Committee Minutes, October 9, 1928, page 4.
General Contracts Ordered Renewed for one year from Expiration Date.

(b) Brief #580. Lockwashers. Reliance Mfg. Co. and Mansfield Lockwasher Company. Effort to be made to include in contract everything manufactured by these companies.

Defendant's Exhibit (GM) No. 165

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SPECIAL DISCOUNTS ON PURCHASES FROM DU PONT
SHOWING
AMOUNT OF DISCOUNT PER VEHICLE SOLD

Period of Time for Which Discount Applicable	Dollar Amount of Discount	Number of Vehicles Sold by General Motors (in U. S.)	Amount per Vehicle
10/1/26 - 6/30/27 (9 months)	$ 77,206.75	1,056,092	$.0731
7/1/27 - 6/30/28 (1 year)	200,136.79	1,662,567	.1204
7/1/28 - 6/30/29 (1 year)	379,245.60	1,789,356	.2120
7/1/29 - 12/31/30 (1½ years)	None	1,808,462	0
1/1/31 - 12/31/31 (1 year)	1,020.81	997,742	.0010
1/1/32 - 12/31/32 (1 year)	411.72	507,030	.0008
Total for Entire Period of Time Discount in Effect 10/1/26 - 12/31/32	$658,021.67	7,821,249	

Average amount of discount from du Pont per vehicle sold by General Motors during entire period discount in effect $.0841

Cost Analysis Section.
2/10/53

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EXCERPTS FROM MINUTES OF GENERAL PURCHASING COMMITTEE

General Purchasing Committee Minutes, October 25, 1923, page 3.
Items for which Annual Expenditures Aggregate a Very Large Sum Reviewed with the Idea that the Discussion would Develop Possibilities of Further Co-ordination of Buying or General Contract Possibilities.

(q) Paints - Color, Varnish.
Secretary instructed to write to Paint Committee to find out if anything towards standardization can be accomplished.

Standing Sub-Committee Minutes, December 5, 1923, page 6 of General Purchasing Committee Minutes of December 6, 1923.
Miscellaneous Matters.

(e) Paints - Color, Varnish.
Mr. Mougey of the Research Corporation is to appear before the next meeting of the Sub-committee to discuss the subject in detail.

Standing Sub-committee Minutes, July 1 & 2, 1924, page 12 of General Purchasing Committee Minutes of July 2, 1924.
Items presented for Questionnaire.

(f) Mill White Paint.
Develop.

(h) Duco Paint and Reducer.
Develop.

Standing Sub-Committee Minutes, September 4, 1924, page 7 of General Purchasing Committee Minutes of September 5, 1924.
Reports on Questionnaires Authorized at July 2nd Meetings.

Aggregate annual expenditures reported as follows: as of date -

(a) Duco Paint & Reducer. $1,394,039.00.
Determine reasons for different prices on colors.

(b) Mill White Paint $16,683.00.
Contract proposals to be developed.

Standing Sub-Committee Minutes, November 6, 1924, page 1.
General Contract Proposals Considered.
(d) Mill White Paint.
The summaries of contract proposals submitted indicate a wide variation in prices. There is not sufficient information regarding quality of products quoted on to warrant placing of general contract at this time. Action is deferred awaiting results of tests being conducted at Buick.

General Purchasing Committee Minutes, November 20, 1924, page 2.
General Matters.
(g) Duco.
Letter from Chemical Products Division of the duPont Company offering General Motors the opportunity to pool their purchases of Duco and Thinner so that each unit might enjoy the maximum discount earned by the pool during any three months period, and enclosing copy of letter to Purchasing Agents of Car Divisions dealing with the offer was read. It was believed that the General Motors purchases of Duco together with those of Fisher Body Corporation would in any period aggregate the amount required for maximum discount, but that even though this amount is not regularly met the maximum discount should be insisted upon, and further, if agreeable, that this discount be deducted from the invoice price on each invoice so as to avoid cumulative credit which would not be properly reflected in current car costs.
Forecasts of divisions' requirements for six months from December 1, 1924 will be promptly secured. It was brought out that no effort had yet been made to develop competitive price situation as regards pyroxylin paints and that this fact should be given consideration by the duPont Company.

Standing Sub-committee Minutes, December 12, 1924, page 1.
General Contract Proposals Considered.
(g) Duco.
Secretary advised that agreement had been reached with Chemical Products Division of du Pont to charge on a general contract for

General Motors' requirements of Pyroxylin finishes for the first six months of 1925 net prices equivalent to the list prices less 6% f.o.b. Parlin, N.J., the 6% being the maximum cumulative quantity discount. General contract authorized.

Defendant's Exhibit (GM) No. 167

7159

Agreement, dated the 2nd day of January, 192.5., between E. I. du Pont de Nemours & Company, Chemical Products Div., Flint Plant. hereinafter called the "Seller," and GENERAL MOTORS CORPORATION Detroit, Michigan a corporation of Delaware hereinafter referred to as the "Buyer," WITNESSETH:

The Seller agrees to sell and the Buyer agrees to purchase, at the price and upon and subject to the following terms and conditions, the following articles, hereinafter referred to as the "articles."

1. DESCRIPTION AND QUANTITIES: PRICE PER

Buyer's requirements of Pyroxylin finishes, including Duco and Duco Thinner, at the following prices:

Duco in all colors, including black	$4.40 per gallon in 5-gallon cans.
Duco Thinner #3601	$2.00 per gallon in 50-gallon drums.

It is agreed that the above prices are subject to a discount of 6%, and the prices charged on invoices will be NET prices, which will include this 6%.

2. TERMS OF PAYMENT: 1% cash discount, 10th proximo; net cash, end of month following date of invoice.

3. F. O. B. Parlin, N.J.

4. DELIVERIES: Delivery shall be made as may be specified from time to time on buyer's regular purchase orders, on or before June 30, 1925 without charge for boxing, crating, cartage or storage, suitably packed to secure lowest transportation cost, and in accordance with the requirements of Common Carriers.

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5. SPECIAL EQUIPMENT: Unless otherwise herein agreed, special dies, tools and patterns used in the manufacture of said articles shall be furnished by and at the expense of the Seller. Said dies, tools and patterns shall be kept in good condition and from time to time, when necessary, shall be replaced by Seller without expense to Buyer. However, the Buyer has the option at any time to reimburse the Seller for the whole or any part of said dies, tools or patterns and replacements and become the owner and entitled to the possession of same. All changes in said dies, tools and patterns, due to the Buyer's change of design or specifications shall be paid for by the Buyer.

6. SPECIFICATIONS: Said articles shall be according to specifications, drawings, samples, or other description furnished or adopted by the Buyer.

7. WARRANTIES: The Seller warrants articles supplied under this contract to conform to specifications herein, to be fit and sufficient for the purpose intended, merchantable, of good material and workmanship, and free from defect.

8. INSPECTION AND REJECTIONS: All articles shall be subject to the Buyer's inspection within a reasonable time after delivery, irrespective of date of payment thereof, but the Buyer shall promptly notify the Seller of any defects detected and hold any articles so claimed to be defective for the Seller's instructions and at his risk, for a reasonable period not to exceed 60 days.

9. PATENT PROTECTION: The Seller warrants that the articles purchased hereunder do not and will not infringe any Letters Patent granted by the United States of America or the Dominion of Canada. The Seller covenants and agrees to save harmless and protect the Buyer, its successors, assigns, customers and users of its product, against any claim or demand based upon such infringement, and after notice, to appear and defend at its own expense any suits at law or in equity arising therefrom.

If said articles are protected by one or more patents, and a decree or judgment be entered in a court of competent jurisdiction holding any such patent or its claim invalid, or so limited in scope as to impair its protection commercially, this contract may forthwith be cancelled.

10. NON-PERFORMANCE EXCUSED: The Seller shall not be responsible for delays or defaults in deliveries, nor the Buyer for failure to receive, if occasioned by wars, strikes, fires, the act of God or the public enemy, labor or transportation difficulties or other causes beyond their control.

11. INSOLVENCY AND CANCELLATION: In the event of any proceedings by or against either party, voluntary or involuntary, in bankruptcy or insolvency, or for the appointment of a receiver or trustee or an assignee for the benefit of creditors, of the property of either party, or in the event of the breach of any of the terms hereof, including the warranties of the Seller, the other party shall be entitled to cancel this contract forthwith.

12. REMEDIES, ETC.: The remedies herein reserved shall be cumulative, and additional to any other or further remedies provided in law or equity. No waiver of a breach of any provision of this contract shall constitute a waiver of any other breach or of such provision. Except as expressed herein, there are no antecedent or other agreements respecting the subject matter hereof; any modifications or variations of this contract, to be binding, shall be in writing, executed in behalf of the parties by like authority as this contract.

13. THE SELLER shall not, without first obtaining the written consent of the Buyer, in any manner advertise or publish the fact that the Seller has contracted to furnish Buyer the articles herein mentioned, and for failure to observe this provision Buyer shall have the right to cancel this contract without any further liability thereon.

14. MICHIGAN CONTRACT AND NON-ASSIGNMENT: This contract is to be construed according to the laws of the State of Michigan and is non-assignable by the Seller.

15. IN WITNESS WHEREOF the parties hereto have caused these presents to be executed in duplicate the year and date first above written.

GENERAL MOTORS CORPORATION

By: James Shinnah
GENERAL PURCHASING COMMITTEE

E. I. du PONT de NEMOURS & COMPANY

By: W. S. Ahlenius
Mgr. Automotive Sales

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Defendant's Exhibit (GM) No. 168 7162

GENERAL MOTORS CORPORATION

GENERAL PURCHASING COMMITTEE

DETROIT, MICHIGAN

SUBJECT DUCO. July 19, 1924.

ATTENTION OF Mr. H. G. Mougey,
General Motors Research,
Dayton, Ohio.

Dear Sir:

I regret that my absence from Detroit prevented my attending the meeting of the Paint Committee at Flint on July 8th.

At the meeting of our Committee on July 2nd it was decided to develop the competitive field for pyroxlin paints.

I appreciate the need for caution in considering suppliers of this product. Have you approved as suitable for our purposes pyroxlin paint made by any other sources than the DuPont Company, if so I shall be glad to have a list of the approved suppliers.

Can you give me a list of the manufacturers who are making, or attempting to make pyroxlin paint?

Very truly yours,

James Lynah

James Lynah:EB. Secretary.

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Defendant's Exhibit (GM) No. 169

July 25, 1924.

Mr. James Lynah,
General Motors Corp.,
Detroit, Mich.

7163

Dear Mr. Lynah:-

In reply to your letter in regard to developing the competitive field for pyroxlin paints, the Paint Committee has considered this matter and have requested that our laboratory test materials to find as many possible sources of supply for pyroxlin paints as possible. We are already in touch with the Zapon people and the Beckwith-Chandler Company. We have received samples from the Glidden Company for use on steering wheels but we have not received any of the latest materials similar to duco from any Companies except the Zapon Company and Beckwith-Chandler Company.

In order to secure better results we would appreciate it very much if you would take up with the different Companies the matter of submitting samples for test at our laboratory.

We would suggest the following Companies:
Sherwin-Williams Company.
Valentine Varnish Company.
Murphy Varnish Company.
Egyptian Lacquer Company.
Glidden Varnish Company.

We have not as yet had sufficient tests on either the Zapon or Beckwith-Chandler materials to be willing to approve them. However, both the Zapon Company and the Beckwith-Chandler Company appear to understand the problem and the samples that they submitted look very good and we hope that within a short time our tests will have progressed sufficiently far to enable us to approve these materials.

Yours very truly,

H. C. Mougey,
Control Chemist.

M:B

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Defendant's Exhibit (GM) No. 170

7164

August 4, 1924.

Sherwin-Williams Company,
539 Woodward Ave.,
Detroit, Michigan.

Gentlemen:

If your developments of Pyroxylin Paints have proceeded sufficiently far so that you are in position to quote prices and supply the products in any quantity we should like to have you send to -

General Motors Research Corporation,
Dayton, Ohio.
Attn: Mr. H.C.Mougey

samples for inspection and determination.

Please send us quotations covering any samples which you send to Mr. Mougey.

Very truly yours,
GENERAL PURCHASING COMMITTEE.

James Lynah:EB. Secretary.

4962

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Defendant's Exhibit (GM) No. 171

GENERAL MOTORS CORPORATION

Detroit, Michigan 7165

August 4, 1924

Valentine Varnish Company
456 Fourth Avenue
New York City

Gentlemen:-

If your developments of Pyroxylin Paints have proceeded sufficiently far so that you are in position to quote prices and supply the products in any quantity we should like to have you send to -

General Motors Research Corporation,
Dayton, Ohio
Attention: Mr. H. C. Mougey

samples for inspection and determination.

Please send us quotations covering any samples which you send to Mr. Mougey.

Very truly yours,
GENERAL PURCHASING COMMITTEE

James Lynah (Signed)

Secretary

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Defendant's Exhibit (GM) No. 172

7166

Defendants' Trial Ex. No. GM-172

Letterhead of

GENERAL MOTORS CORPORATION
General Purchasing Committee
Detroit, Michigan

January 22, 1925.

Subject DUCO.

Attention of

Messrs: G. G. Allen
H. L. Burton
D. F. Hulgrave
C. M. Lejuste
C. O. Miller

Messrs: C. S. Mott
D. P. O'Keefe
J. L. Pratt
A. P. Sloan, Jr.

It comes to our attention that Fisher Body are using, on certain work, pyroxylin finishes of a manufacture other than Duco. Pyroxylin finishes as adapted for automobile painting are very complex in character and their fitness and durability can be determined only after long time tests.

No agency of General Motors has made any durability test of the Forbes product which is now being used by Fisher Body, in fact we understand that this make of pyroxylin finish is rather new in the market.

It is appreciated that a field of competition for Duco should be developed. Certainly because of the proven qualities of Duco it has no competition at the present time.

It is suggested that we request General Motors Research to begin certain characteristic and durability tests of

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competitive pyroxylin finishes, and you are requested to suggest any makes which have been brought to your attention by reliable concerns.

It is the impression that General Motors have advertised the use of Duco on their cars, and the use of other unproven products may lead to embarrassment.

Very truly yours,

JAMES LYNAH
Executive Secretary.

James Lynah:EB.

Defendant's Exhibit (GM) No. 173

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GENERAL MOTORS CORPORATION

GENERAL PURCHASING COMMITTEE

DETROIT MICHIGAN

SUBJECT PYROXYLIN FINISHES.

February 10, 1925.

ATTENTION OF

Mr. F.J.Clements,
General Motors Research,
Dayton, Ohio.

Dear Sir:

This matter has been discussed by our committee and you are requested to secure samples and make continuous durability tests of the following pyroxylin finishes including Duco.

"Valenite" manufactured by the Valentine Varnish Co.
"Murkel" " " " Murphy Varnish Co.
"Mimax" " " " Patton Pitcairn Div. of the Pittsburgh Plate Glass Co.

In addition to the above there is the Forbes product which Fisher Body have been using to some extent, and a product manufactured by the Acme White Lead and Color Works, the trade-name of which we do not have.

The product manufactured by the Zapon Company of Stamford, Conn. and the Beckwith Chandler Company of Newark, N.J. might also be properly tested.

Very truly yours,

James Lynah

James Lynah:EB.

Executive Secretary.

NOTE:. In the upper left hand corner "Mr. Mougey" appears in handwriting.

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Defendant's Exhibit (GM) No. 174

7169

March 13, 1925.

Mr. L. B. Valentine,
Valentine & Company,
456 Fourth Ave.,
New York, N.Y.

Dear Mr. Valentine:—

In reply to your letter in regard to samples of pyroxylin finishes, the General Motors Purchasing Committee is anxious to keep in touch with the new developments in pyroxylin finishes. There are now about 25 or 30 brands of pyroxylin finishes for automobiles on the market. Some of these finishes may be good while some are very bad, as we have found from actual experience.

In all probability the General Motors Purchasing Committee will have preliminary tests made on the samples submitted and in the case of materials which look interesting, further tests will probably be made. The information obtained by the General Motors Purchasing Committee would be sent to the different General Motors Units through their connection with the Purchasing Committee.

In regard to the inquiry from the Buick, it appears that the Buick Company individually is interested in your material. Tests made by the Buick will be largely for Buick information only.

Yours very truly,

H. C. Mougey,
Control Chemist.

M:B

CC to Mr. James Lynah.

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Defendant's Exhibit (GM) No. 175

GENERAL MOTORS CORPORATION

GENERAL PURCHASING COMMITTEE

DETROIT, MICHIGAN

71'70

SUBJECT PYROXYLIN FINISHES. May 20, 1925.

ATTENTION OF Mr.H.C.Mougey,
General Motors Research,
Dayton, Ohio.

We are negotiating new contract with the duPont Company for Duco requirements for the second half of this year.

It is highly desirable to have come competitive figures. There is no use in our getting them from suppliers whose pyroxylin finishes are not approved.

I understand that Paige-Jewett, Flint, and Packard are using Zapon. Have your tests gone far enough for you to permit of putting Zapon on the approved list?

Are there any others that you are inposition to approve? Please advise promptly.

Very truly yours,

James Lynah

Executive Secretary.

James Lynah:ZB.

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Defendant's Exhibit (GM) No. 176

May 23, 1925.

7171

Mr. James Lynah,
General Motors Corp.,
General Motors Bldg.,
Detroit, Mich.

Dear Mr. Lynah:—

In reply to your letter dated May 20th, the matter of tests on cellulose nitrate finishes is a very difficult one. When one is dealing with material as durable as Duco, it is very difficult to estimate its total life and also estimate the life of other materials as compared with Duco. We are enclosing a report on the comparison of the durability of Duco with black enamel, which illustrates the durability of Duco. Our roof exposure tests are at an angle of 45° facing the South, and as a result the exposure is very much more severe than that of the average automobile, although it is possible in the case of automobiles which are parked out doors continuously to get just as severe exposure on the hoods, cowls and decks.

One reason why it is so difficult to estimate the life of a cellulose nitrate finish is the fact that all cellulose nitrate finishes, like black enamels, lose their lustre on exposure and in order to be kept looking good the occasional use of polish is required. This loss of lustre is due to microscopic surface cracks as shown in the report on the comparison of durability of Duco with other finishes. If these micro cracks are so small that they cannot be seen even with a very high powdered microscope and are so shallow that a very mild polishing operation restores the original finish, then by occasional polishing it is possible to keep the finish with a perfect appearance for a very long time.

If the cracks are deeper a much more severe polishing

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is required to remove the cracks and in some cases the cracks may be so deep that they cannot be removed by polishing at all.

Under separate cover we are sending you a number of exposure test panels taken from our roof, together with full details as to the method of preparation of the panel, length of exposure, etc. 448-7A (Duco) and 448-6A (Zapon) are two materials representing the type of material which does not show cracks which can be seen even with a high powered microscope. The bottom halves of these panels are polished to show the effect of polishing. The top halves of the panels have never been touched since they were exposed on the roof July 25, 1924.

448-1A (Beckwith Chandler) illustrates a material which fails in microscopic cracks but these cracks can be removed entirely by polishing. 448-5A (Zapon) represents a material which fails in larger cracks which can be removed almost entirely by polishing. In this case the entire panel was polished by mistake. 519-3B (Miroloid Maroon) represents a material which fails in large and deep enough cracks so that polishing will neither restore the lustre nor remove the appearance of the cracks under the microscope. 523-2 (Beckwith Chandler Maroon) represents one of the most severe types of cracking ever encountered in cellulose nitrate materials.

In these illustrations we have used maroon for the bad failures, since there is a great difference in the durability of different cellulose nitrate colors. We have never yet found a satisfactory maroon made by any Company. One of the reasons why it is so difficult to approve finishes made by different Companies is because each color is a problem

in itself. A Company may make a very good black and yet certain shades of grays, blues, etc., may be very bad. Even the duPont Company with all of their experience are not able to make a satisfactory maroon, and although on account of very elaborate testing, both by the duPont Company and our laboratory, we have kept out of serious trouble on any of the different colors, even such colors as blue, were not always made by the duPont Company with as high a durability as they now possess.

Panel 385-7 illustrates one of the earliest Ducos developed before we went into production on Duco. This particular panel was exposed along with some of the later Ducos to show the improvement in the present material on 4-12-24.

Another factor which makes it very difficult to judge these finishes is the fact that all of the Companies who are trying to duplicate Duco are constantly improving their materials. We feel that none of the exposure tests which we made last Summer and last Winter represent the same material as was submitted by you this Spring. In most cases we feel that the Companies have improved their materials in the meantime, but in some cases, due to inability to actually determine whether a change is an improvement or not, we feel that changes have been made for the worse. This matter of changing the composition of the material is one on which we have insisted very strongly with the duPont Company. No changes are made in the material until after very extensive tests. These tests are made with the co-operation of our laboratory and the duPont laboratory.

The ultra-violet light test is the best quick test which we have for cellulose nitrate materials but it must be used with a very great amount of caution and discretion. This

point is discussed in the reprint which I am enclosing.

Although it is possible to get materials which have a long life under the ultra-violet light and which fail in a very short time on exposure as illustrated by test panel 494-1B (Bodylac made by Robert Ingram Clark) which was exposed 9-26-24 and cracked badly 1-5-25, with an ultra-violet light test of 10 days, we have not as yet found a material with a very short life under the ultra-violet light which gives a long life on exposure.

We feel that in the case of material which is advertised by our Companies as strongly as Duco, no production should be under-taken on material which has not had at least a full year exposure test on test racks. As pointed out previously, the test rack exposure is much more severe than that of the average car and we do not feel that the use of any material on cars, in production since last Fall is a sufficiently long and severe test to warrant the General Motors going into production on such material. The ordinary finishing varnish finish such as was replaced by Duco should give excellent results and show no signs of failure inside of 7 months on a car which was delivered to the owner in the Fall.

Some of the Companies trying to develop materials like Duco are advocating cellulose nitrate primers and surfacers. We feel that the use of any primers and surfacers other than force dried paint and varnish materials are unwise at the present time. Test panel 356-2A shows the results we obtained with Egyptian lacquer using cellulose nitrate materials for primer, surfacer and top materials. The materials from most other Companies give similar results, however, the Valentine Company are pushing cel-

lulose nitrate primers and surfacers and we believe their material may develop into something very interesting.

Test panels 540-1 and 540-2 are Valentine's materials using cellulose nitrate primer, surfacer and top coats. By cutting these 3 panels with a pen knife you can see the difference in Valentine's primers and surfacers and in Egyptian primers and surfacers, which the Egyptian Company was making at the time these tests were made. We believe that both the Egyptian Company and the Valentine Company have changed their materials since these exposure tests were made.

In conclusion we believe that the other Companies who are competing with duPont have already developed individual colors in many cases which are the equal of Duco. We also believe that most, if not all, of the other Companies have not as yet developed a full line of colors of high durability. It is an open question whether it is possible at the present time to choose any individual color made by a competing Company and guarantee that its durability is as great as that of Duco. In addition, there are many other properties such as quality of the color, ease of spraying, covering power, polishing properties, and other working properties which must be determined by actual tests on cars under production conditions.

Under these conditions we believe it would be desirable for the General Motors Corporation to put out at once a limited number of cars finished with the particular colors from competing Companies in which we are most interested. The working properties of these materials should be checked by the Foreman of the Production Plant and

records made so that the individual cars can be traced after they have been delivered to the owner. In this way we feel that the General Motors Corporation will be in a position by next Spring to definitely put into production materials made by some of the Companies competing with Duco.

We are enclosing tests records on the competing cellulose nitrate finishes which we exposed last Summer, together with the tests which we have made on the samples which you submitted to us this Spring.

These test panels are sent to you for your information but if they are still in good condition after you have finished with them, please return them to us and we will again expose them on our test racks.

Yours very truly,

H. C. Mougey,
Control Chemist.

M:B

TEST PANELS SUBMITTED TO MR. LYNAH

(See Mr. Mougey's Letter, May 23, 1925).

These panels were exposed on our Test Rack, forty-five degrees facing south on the dates given below. All panels were taken in May 22, 1925.

Unless otherwise noted, all materials are over General Motors forced dry primers and surfacers known to be satisfactory.

The following materials DO NOT SHOW cracks even under the high power microscope. The surface may be restored by polishing. In some cases, the Ultra-Violet Life Test is very short, but these panels have not been exposed long enough to determine their life on exposure.

Panel Number	Material	Date Exposed	Ultra-Violet Life Test
385-1	Miamax Black	4-12-24	Over 3 Weeks.
437-11	Duco 244531 Blue	7- 9-24	30 Days.
*448-6a	Zapon Blue b	7-25-24	4 Days.
448-7a	Duco 244433 Gray	7-25-24	Over 30 Days.
479-1	Murphy's Fawn Gray	9-13-24	3 Days.
479-7	Murphy's Light Blue	9-13-24	6 Days.
479-8	Murphy's Dark Blue	9-13-24	9 Days.
480-1	Beckwith-Chandler Neolite Ebony Black	9-13-24	2 Days.
480-2	Beckwith-Chandler Thistle Green	9-13-24	5 Days.
481-2	Duco 244573 Battleship Gray	9-13-24	19 Days.
481-1	Duco 244626 Bloomfield Gray	9-13-24	19 Days.
516-3	Duco	11-22-24	———
519-1b	Miroloid Dull Black	11-22-24	9 Days.
519-4b	Miroloid Blue	11-22-24	7 Days.
519-5b	Miroloid Sagebrush Green	11-22-24	———
**540-1	Valentine Black	1-30-25	16 Days.
**540-2	Valentine Blue	1-30-25	16 Days.
553	Forbes Black	3- 6-25	30 Days.
554	Valentine Black	3- 6-25	16 Days.
555	Valentine Blue	3- 6-25	16 Days.

*448-6a Zapon Blue b developed microscopic cracks on the exposure test panel 9-9-24, but these cracks were very small, and on longer weathering of the panel they disappeared.

**540-1 and 540-2 are Valentine's primer, surfacer and topcoat of Pyroxylin materials.

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TEST PANELS SUBMITTED TO MR. LYNAH

(See Mr. Mougey's Letter, May 23, 1925).

These panels were exposed on our Test Rack, forty-five degrees facing south on the dates given below. All panels were taken in May 22, 1925.

Unless otherwise noted, all materials are over General Motors forced dry primers and surfacers known to be satisfactory.

The following materials SHOW CRACKS. Those in which the cracks are very small may be polished to a high luster, but the surface cannot be restored by polishing on those with larger cracks. Some of these panels represent experimental finishes made by the different companies, and should not be taken as representative of their regular materials.

Panel Number	Material	Date Exposed	Ultra-Violet Life Test	Date First Cracks Noticed
*356-2a	Egyptian Lacquer Green #666	2-14-24	———	6-25-24
356-3	Egyptian Lacquer Green #666	2-14-24	———	6-25-24
385-7	Duco 244340 Blue	4-12-24	10 Days	10-15-24
437-7	Beckwith-Chandler Neolite	7- 9-24	———	2-20-25
448-1a	Beckwith-Chandler Sagebrush Green	7-25-24	5 Days.	2-20-25
448-2a	Beckwith Chandler Ebony Black	7-25-24	2 Days.	2-20-25
448-5a	Zapon Blue Enamel C.	7-25-24	2 Days.	9- 9-24
479-2	Murphy Murcote Buckingham Gray	9-13-24	3 Days.	2-20-25
479-3	Murphy Murcote Light Red	9-13-24	4 Days.	2-20-25
479-4	Murphy Murcote Brewster Green	9-13-24	6 Days.	5-22-25
479-5	Murphy Murcote Sagebrush Green	9-13-24	3 Days.	5-22-25
479-6	Murphy Murcote Citrus Yellow	9-13-24	4 Days.	1- 8-25
494-1b	Robert Ingram Clark's Bodilac	9-26-24	10 Days.	1- 5-25
519-2b	Miroloid Gloss Black	11-22-24	2 Days.	4- 6-25
519-3b	Miroloid Maroon	11-22-24	2 Days.	2- 3-25
523-3	Beckwith-Chandler Ebony Black	12-12-24	———	———

*Egyptian Lacquer, primer, surfacer and topcoat.

4976

7179

NOTE: On page 1 in the margin panel number 448-6a is checked; panel numbers 479-1, 479-7 and 479-8 are checked and the name Scott is written alongside them; panel number 480-1 is checked and the name McQuaid is written alongside it; panel number 553 is checked and the name Fisher is written alongside it; panel numbers 554 and 555 are checked and the name Scott is written alongside them.

4977

Defendant's Exhibit (GM) No. 178

7180

GENERAL MOTORS RESEARCH CORPORATION
Inter Organization Letters Only

May 26, 1925

Paint and Enamel Committee
Meeting, June 1st, 1925,
10:00 o'clock.

Messrs: Houser, MacQuaid, Widman, Bergland, Kinney, Weckler, Scott, Mougey.

Gentlemen:—

There are a number of questions up for consideration by the Paint and Enamel Committee. Consequently, a meeting seems to be quite desirable and has been set for Monday, June 1st. at 10:00 o'clock. We will assemble at Mr. Bergland's office, or at such conference room as he may provide.

Subjects for discussion are as follows:

Work assigned to Mr. Mougey by Committee

a. Striping b. Ground Coats c. Polishes d. Finishes for Wood	All appertaining to Duco.

In addition, Mr. Lynah, Executive Secretary, General Purchasing Committee, has asked the laboratory to pass upon various finishes intended to substitute for Duco. Mr. Mougey has been very active upon this work. We believe that this whole question of substitutes should be discussed by the entire committee and have invited Mr. Lynah to meet with us. One or more reports will go out prior to the meeting. These will serve to stimulate discussion.

Yours very truly,

Director of Research.

FOC:de

Defendant's Exhibit (GM) No. 179

7181

C P 18 8M 12-24
PRINTED IN U.S.A.

Agreement, dated the 1st day of July, 1925, between E.I. duPONT deNEMOURS & COMPANY, CHEMICAL PRODUCTS DIV., FLINT PLANT hereinafter called the "Seller," and GENERAL MOTORS CORPORATION DETROIT, MICHIGAN a corporation of DELAWARE hereinafter referred to as the "Buyer," WITNESSETH:

The Seller agrees to sell and the Buyer agrees to purchase, at the price and upon and subject to the following terms and conditions, the following articles, hereinafter referred to as the "articles."

1. DESCRIPTION AND QUANTITIES: PRICE PER

100% of Buyer's requirements and 50% or more of Fisher Body Corporation's requirements of Pyroxylin Finishes, including Duco and Duco Thinner, at the following prices:

Duco in all colors including Black	$4.40	per gallon in 5-gallon cans
Duco	4.65	" " " 1- gallon cans
Duco Thinner 3601	2.00	" " " 50-gallon drums

It is agreed that from the above prices the following schedule of quantity discounts from invoices rendered in any quarter of the calendar year will apply:

$25,000	-	1%	$250,000	-	7%
50,000	-	2%	300.000	-	8%
75,000	-	3%	400,000	-	9%
100,000	-	4%	500,000	-	10%
150,000	-	5%	600,000	-	11%
200,000	-	6%	700,000	-	12%

It is further agreed that purchases of any products classed as Duco will be included in the quantity subject to discount.

Prices include deliveries to factory branches upon orders received from the purchasing department of the factory owning the branches to which deliveries are specified to be made.

It is further agreed that 6% based on quarterly purchases of $200,000 will be deducted on the face of each invoice rendered during the period of the contract. The DuPont Company will refund to General Motors at the end of each quarter, for proper distribution to divisions, any quantity discounts earned in excess of 6%.

2. TERMS OF PAYMENT: From the net amount of the invoice 1% cash discount for payment on or before 25th prox. will be allowed.

3. F. O. B. Destination.

4. DELIVERIES: Delivery shall be made between the date hereof and as may be specified from time to time on buyer's regular purchase orders, on or before December 31, 1925 without charge for boxing, crating, cartage or storage, suitably packed to secure lowest transportation cost, and in accordance with the requirements of Common Carriers.

(OVER)

4979

7182

It is further agreed that Containers are to be returned to the Seller f.o.b. Buyer's Plants.

4980

7183

5. SPECIAL EQUIPMENT: Unless otherwise herein agreed, special dies, tools and patterns used in the manufacture of said articles shall be furnished by and at the expense of the Seller. Said dies, tools and patterns shall be kept in good condition and from time to time, when necessary, shall be replaced by Seller without expense to Buyer. However, the Buyer has the option at any time to reimburse the Seller for the whole or any part of said dies, tools or patterns and replacements and become the owner and entitled to the possession of same. All changes in said dies, tools and patterns, due to the Buyer's change of design or specifications shall be paid for by the Buyer.

6. SPECIFICATIONS: Said articles shall be according to specifications, drawings, samples, or other description furnished or adopted by the Buyer.

7. WARRANTIES: The Seller warrants articles supplied under this contract to conform to specifications herein, to be fit and sufficient for the purpose intended, merchantable, of good material and workmanship, and free from defect.

8. INSPECTION AND REJECTIONS: All articles shall be subject to the Buyer's inspection within a reasonable time after delivery, irrespective of date of payment thereof, but the Buyer shall promptly notify the Seller of any defects detected and hold any articles so claimed to be defective for the Seller's instructions and at his risk, for a reasonable period, not to exceed 60 days.

9. PATENT PROTECTION: The Seller warrants that the articles purchased hereunder do not and will not infringe any Letters Patent granted by the United States of America or by any country foreign thereto. The Seller covenants and agrees to save harmless and protect the Buyer, its successors, assigns, customers and users of its product, against any claim or demand based upon such infringement, and after notice, to appear and defend at its own expense any suits at law or in equity arising therefrom.

If said articles are protected by one or more patents, and a decree or judgment be entered in a court of competent jurisdiction holding any such patent or its claim invalid, or so limited in scope as to impair its protection commercially, this contract may forthwith be cancelled.

10. NON-PERFORMANCE EXCUSED: The Seller shall not be responsible for delays or defaults in deliveries, nor the Buyer for failure to receive, if occasioned by wars, strikes, fires, the act of God or the public enemy, labor or transportation difficulties or other causes beyond their control.

11. INSOLVENCY AND CANCELLATION: In the event of any proceedings by or against either party, voluntary or involuntary, in bankruptcy or insolvency, or for the appointment of a receiver or trustee or an assignee for the benefit of creditors, of the property of either party, or in the event of the breach of any of the terms hereof, including the warranties of the Seller, the other party shall be entitled to cancel this contract forthwith.

12. REMEDIES, ETC: The remedies herein reserved shall be cumulative, and additional to any other or further remedies provided in law or equity. No waiver of a breach of any provision of this contract shall constitute a waiver of any other breach or of such provision. Except as expressed herein, there are no antecedent or other agreements respecting the subject matter hereof; any modifications or variations of this contract, to be binding, shall be in writing, executed in behalf of the parties by like authority as this contract.

13. THE SELLER shall not, without first obtaining the written consent of the Buyer, in any manner advertise or publish the fact that the Seller has contracted to furnish Buyer the articles herein mentioned, and for failure to observe this provision Buyer shall have the right to cancel this contract without any further liability thereon.

14. MICHIGAN CONTRACT AND NON-ASSIGNMENT: This contract is to be construed according to the laws of the State of Michigan and is non-assignable by the Seller.

15. IN WITNESS WHEREOF the parties hereto have caused these presents to be executed in duplicate the year and date first above written.

GENERAL MOTORS CORPORATION

By: .....
GENERAL PURCHASING COMMITTEE

E. I. duPONT de NEMOURS & COMPANY

By: .....

4981

GENERAL MOTORS CORPORATION

DETROIT MICHIGAN

7185

August 6, 1925

E.I. duPont deNemours & Company,
5-140 General Motors Building,
Detroit, Michigan

Gentlemen: Attention Mr. W. J. Schlinger

The following additional provisions to our contract dated July 1, 1925 covering our requirements of Pyroxylin Finishes including Duco and Duco Thinner are to be made a part of said contract:

1. It is further agreed that the Seller will refund the Buyer at the end of each quarter, any quantity discounts earned in excess of 6%, but in case the purchases are less than $200,000 for any quarter, the discount will be refunded by Buyer as outlined in the contract. For example, should the purchases total $150,000 during the quarter, the discount would be on a basis of 5%, etc.

2. On all shipments by rail to Oakland, Cal., it is further agreed that Seller will allow freight to St. Louis, Mo. On the return of empty containers Seller will allow freight from St. Louis, Mo., to Seller's Plants. But in case shipments are made by boat from Seller's Plants to Oakland, Cal., full freight will be allowed, as well as on the return shipments of empty containers.

Very truly yours,

GENERAL PURCHASING COMMITTEE
James Lymah, Executive Secretary

By:
Purchase Contract Investigations

Charles Blake:BK

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E

4983

Mr. H. C. Weckler, August 27, 1925.
Buick Motor Company,
Flint, Michigan.

Dear Mr. Weckler:

At the Paint & Enamel Committee Meeting, held in Detroit, June 9, we discussed the matter of practical tests on a few cars using cellulose nitrate finishes which are offered by the different varnish companies as substitutes for Duco.

The General Motors Purchasing Committee is desirous of obtaining reliable service data which would make it possible to purchase other cellulose nitrate finishes as substitutes for Duco if the price and other commercial factors made such a proceedure desirable.

At the Committee meeting it was decided that each of the car units would finish a few cars with the experimental cellulose nitrate finish in which they are most interested, and complete records of working properties, such as spraying, covering, rubbing, polishing, etc., were to be recorded. After these cars are finished they were to be put in service under such conditions as to make it possible to obtain service data on the durability of the finishes. We feel that it is very important that these tests be made, both from the standpoint of the General Motors Purchasing Committee and the different units.

Each member of the committee was supposed to notify the Chairman as to the make of the material with which they wished to use to finish a few experimental cars.

Since time is rapidly passing and none of the units have notified me of their choice, I am wondering whether you would be willing to go ahead with this work using Valentine finish, made by the Valentine Varnish Company, 456 Fourth Avenue, New York City, N.Y.

Yours very truly,

Chairman,
Paint & Enamel Committee.

FOC:de

Mr. John M. Scott,
Olds Motor Works,
Lansing, Michigan.

August 27, 1925.

Dear Mr. Scott:

At the Paint & Enamel Committee Meeting, held in Detroit, June 9, we discussed the matter of practical tests on a few cars using cellulose nitrate finishes which are offered by the different varnish companies as substitutes for Duco.

The General Motors Purchasing Committee is desirous of obtaining reliable service data which would make it possible to purchase other cellulose nitrate finishes as substitutes for Duco if the price and other commercial factors made such a proceedure desirable.

At the Committee Meeting it was decided that each of the car units would finish a few cars with the experimental cellulose nitrate finish in which they are most interested, and complete records of working properties, such as spraying, covering, rubbing, polishing, etc., were to be recorded. After these cars are finished they were to be put in service under such conditions as to make it possible to obtain service data on the durability of the finishes. We feel that it is very important that these tests be made, both from the standpoint of the General Motors Purchasing Committee and the different units.

Each member of the committee was supposed to notify the Chairman as to the make of the material with which they wished to use to finish a few experimental cars.

Since time is rapidly passing and none of the units have notified me of their choice, I am wondering whether you would be willing to go ahead with this work using Murphy finish, made by the Murphy Varnish Company, 224 McWhorter St., Newark, N.J.

Yours very truly,

Chairman,
Paint & Enamel Committee.

FOC:de

7188

Mr. S. Houser, August 27, 1925.
Fisher-Body Corporation,
Detroit, Michigan.

Dear Mr. Houser:

At the Paint & Enamel Committee Meeting, held in Detroit, June 9, we discussed the matter of practical tests on a few cars using cellulose nitrate finishes which are offered by the different varnish companies as substitutes for Duco.

The General Motors Purchasing Committee is desirous of obtaining reliable service data which would make it possible to purchase other cellulose nitrate finishes as substitutes for Duco if the price and other commercial factors made such a proceedure desirable.

At the Committee meeting it was decided that each of the car units would finish a few cars with the experimental cellulose nitrate finish in which they are most interested, and complete records of working properties, such as spraying, covering, rubbing, polishing, etc., were to be recorded. After these cars are finished they were to be put in service under such conditions as to make it possible to obtain service data on the durability of the finishes. We feel that it is very important that these tests be made, both from the standpoint of the General Motors Purchasing Committee and the different units.

Each member of the committee was supposed to notify the Chairman as to the make of the material with which they wished to use to finish a few experimental cars.

Since time is rapidly passing and none of the units have notified me of their choice, I am wondering whether you would be willing to go ahead with this work using Forbes finish, made by the Forbes Varnish Company, 3800 West 143rd St., Cleveland, Ohio.

Yours very truly,

Chairman,
Paint & Enamel Committee.

FOC:de

Defendant's Exhibit (GM) No. 183

7189

Mr. John MacQuaid,
Chevrolet Motor Car Co.,
Flint, Michigan.

August 27, 1925.

Dear Mr. MacQuaid:

At the Paint & Enamel Committee Meeting, held in Detroit, June 9, we discussed the matter of practical tests on a few cars using cellulose nitrate finishes which are offered by the different varnish companies as substitutes for Duco.

The General Motors Purchasing Committee is desirous of obtaining reliable service data which would make it possible to purchase other cellulose nitrate finishes as substitutes for Duco if the price and other commercial factors made such a proceedure desirable.

At the Committee meeting it was decided that each of the car units would finish a few cars with the experimental cellulose nitrate finish in which they are most interested, and complete records of working properties, such as spraying, covering, rubbing, polishing, etc., were to be recorded. After these cars are finished they were to be put in service under such conditions as to make it possible to obtain service data on the durability of the finishes. We feel that if is very important that these tests be made, both from the standpoint of the General Motors Purchasing Committee and the different units.

Each member of the committee was supposed to notify the Chairman as to the make of the material with which they wished to use to finish a few experimental cars.

Since time is rapidly passing and none of the units have notified me of their choice, I am wondering whether you would be willing to go ahead with this work using Beckwith-Chandler finish, made by the Beckwith-Chandler Company, 193-211 Emmett St., Newark, N.J.

Yours very truly,

Chairman,
Paint and Enamel Committee.

FOC:de

Defendant's Exhibit (GM) No. 184



E. I. DU PONT DE NEMOURS & COMPANY
INCORPORATED
CHEMICAL PRODUCTS DIVISION
DETROIT, MICH.

7190

January 5th, 1926.

James Lynah,
General Motors Corp.,
Detroit, Michigan.

Dear Sir:

Referring to the attached contract covering your requirements of Pyroxylin Finishes during 1926, we wish to call attention to the wording which excludes the foreign plants of the Expert Company by the use of the phrase "domestic plants."

It is our understanding that this contract is to include 100% of the requirements of foreign plants with the exception of such purchases as the Expert Company may desire to make from foreign Duco manufacturing companies affiliated with our interests.

If this is correct, please signify your agreement by approving and making this letter a part of the contract.

Yours very truly,

E. I. du Pont de Nemours & Co.

MANAGER AUTOMOTIVE SALES

1

4988

C. P. 15 SM 6-39 7191

Agreement, dated the 1st day of January, 1940, between E.I. duPONT deNEMOURS & COMPANY, CHEMICAL PRODUCTS DIV., a FLINT PLANT hereinafter called the "Seller," and GENERAL MOTORS CORPORATION DETROIT, MICHIGAN a corporation of DELAWARE hereinafter referred to as the "Buyer," WITNESSETH:

The Seller agrees to sell and the Buyer agrees to purchase, at the price and upon and subject to the following terms and conditions, the following articles, hereinafter referred to as the "articles."

1. DESCRIPTION AND QUANTITIES:

100% of Buyer's requirements for domestic plants and 50% or more of Fisher Body Corporation's requirements of Pyroxylin Finishes including Duco and Duco Thinner, at the following prices:

	PRICE PER	
Duco in all standard colors including Black	$4.40 per gal.	in 5-gal. cans
Duco " " " " " "	4.55 " "	" 1-gal. "
Duco Thinner #621	3.00 " "	"50-gal. drums
Any additional suitable thinners at prices to be agreed upon.		
Brushing Black or Standard Colors	5.00 per gal.	in 5-gal. cans
" " " " "	5.15 " "	" 1-gal. "
Maroon Duco	6.50 " "	" 5-gal. "
" "	6.65 " "	" 1-gal. "

The above prices include deliveries to factory branches upon orders received from the Purchasing Department of the Buyer's factory owning or controlling the branches to which deliveries are specified to be made.

It is agreed that for General Motors Export Company's requirements of Duco in all standard colors including Blacks an additional charge of fifteen (15) cents per gallon will be made. This also applies to Maroon Duco and Brushing Black or standard colors.

It is further agreed that from the above prices the following schedule of quantity discounts from invoices rendered in any quarter of the calendar year will apply:

(OVER)

2. TERMS OF PAYMENT: As noted hereinafter.

3. F.O.B. cars, city in which Buyer's Division is located, with exceptions as noted hereinafter.

4. DELIVERIES: Delivery shall be made between the date hereof and December 31, 1940. as may be specified from time to time on buyer's regular purchase orders, on or before without charge for boxing, crating, cartage or storage, suitably packed to secure lowest transportation cost, and in accordance with the requirements of Common Carriers.

$25,000	- 1%	$400,000	- 9%	$825,000	- 12-1/4%
50,000	- 2%	500,000	- 10%	850,000	- 13-1/2%
75,000	- 3%	600,000	- 11%	875,000	- 13-3/4%
100,000	- 4%	700,000	- 12%	900,000	- 14%
150,000	- 5%	725,000	- 12-1/4%	925,000	- 14-1/4%
200,000	- 6%	750,000	- 12-1/2%	950,000	- 14-1/2%
250,000	- 7%	775,000	- 12-3/4%	975,000	- 14-3/4%
300,000	- 8%	800,000	- 13%	1,000,000	- 15%

It is further agreed that purchases of any products classed as Buss will be included in the quantity subject to the foregoing discount schedule.

It is further agreed that Seller will make adjustments monthly on a 10% basis, final adjustment to be made at end of each quarter. The monthly credit memorandums will be issued to Buyer's Divisions not later than the 10th prox., which will be deducted by Buyer. From this net amount Buyer is entitled to an additional discount of 1% for cash, if payment is made on or before the 20th prox.

If the 10%, which is based on purchases of $800,000 quarterly is not earned, Buyer agrees to refund Seller accordingly. If more than 10% is earned, Seller will then issue additional credit to Buyer.

Seller further agrees to apply purchases in excess of $1,000,000 in any quarter to any other quarter during the year's period which may fall short of $1,000,000.

It is understood that the word "Buyer" used herein shall include all Divisions and affiliated companies of the Buyer in accordance with the list attached hereto and made a part of this agreement.

It is further agreed that containers are to be returned to Seller f.o.b. Buyer's Plants.

On all shipments by rail to Oakland, Cal., or other points west of St. Louis, Mo., it is further agreed that Seller will allow freight to St. Louis, Mo.

On the return of empty containers, Seller will allow freight from St. Louis, Mo., to Seller's Plants.

But in case shipments are made via boat from Seller's Plant to Oakland, Cal., or other points west of St. Louis, Mo., full freight will be allowed; as well as on the return shipments via boat of empty containers.

It is further agreed that on shipments to General Motors Export Company, the delivery terms are f.o.b. Docks, New York City.

7193

5. SPECIAL EQUIPMENT: Unless otherwise herein agreed, special dies, tools and patterns used in the manufacture of said articles shall be furnished by and at the expense of the Seller. Said dies, tools and patterns shall be kept in good condition and from time to time, when necessary, shall be replaced by Seller without expense to Buyer. However, the Buyer has the option at any time to reimburse the Seller for the whole or any part of said dies, tools or patterns and replacements and become the owner and entitled to the possession of same. All changes in said dies, tools and patterns, due to the Buyer's change of design or specifications shall be paid for by the Buyer.

6. SPECIFICATIONS: Said articles shall be according to specifications, drawings, samples, or other description furnished or adopted by the Buyer.

7. WARRANTIES: The Seller warrants articles supplied under this contract to conform to specifications herein, to be fit and sufficient for the purpose intended, merchantable, of good material and workmanship, and free from defect.

8. INSPECTION AND REJECTIONS: All articles shall be subject to the Buyer's inspection within a reasonable time after delivery, irrespective of date of payment thereof, but the Buyer shall promptly notify the Seller of any defects detected and hold any articles so claimed to be defective for the Seller's instructions and at his risk, for a reasonable period, not to exceed 60 days.

9. PATENT PROTECTION: The Seller warrants that the articles purchased hereunder do not and will not infringe any Letters Patent granted by the United States of America or by any country foreign thereto. The Seller covenants and agrees to save harmless and protect the Buyer, its successors, assigns, customers and users of its product, against any claim or demand based upon such infringement, and after notice, to appear and defend at its own expense any suits at law or in equity arising therefrom.

If said articles are protected by one or more patents, and a decree or judgment be entered in a court of competent jurisdiction holding any such patent or its claim invalid, or so limited in scope as to impair its protection commercially, this contract may forthwith be cancelled.

10. NON-PERFORMANCE EXCUSED: The Seller shall not be responsible for delays or defaults in deliveries, nor the Buyer for failure to receive, if occasioned by wars, strikes, fires, the act of God or the public enemy, labor or transportation difficulties or other causes beyond their control.

11. INSOLVENCY AND CANCELLATION: In the event of any proceedings by or against either party, voluntary or involuntary, in bankruptcy or insolvency, or for the appointment of a receiver or trustee or an assignee for the benefit of creditors, of the property of either party, or in the event of the breach of any of the terms hereof, including the warranties of the Seller, the other party shall be entitled to cancel this contract forthwith.

12. REMEDIES, ETC: The remedies herein reserved shall be cumulative, and additional to any other or further remedies provided in law or equity. No waiver of a breach of any provision of this contract shall constitute a waiver of any other breach or of such provision. Except as expressed herein, there are no antecedent or other agreements respecting the subject matter hereof; any modifications or variations of this contract, to be binding, shall be in writing, executed in behalf of the parties by like authority as this contract.

13. THE SELLER shall not, without first obtaining the written consent of the Buyer, in any manner advertise or publish the fact that the Seller has contracted to furnish Buyer the articles herein mentioned, and for failure to observe this provision Buyer shall have the right to cancel this contract without any further liability thereon.

14. MICHIGAN CONTRACT AND NON-ASSIGNMENT: This contract is to be construed according to the laws of the State of Michigan and is non-assignable by the Seller.

15. IN WITNESS WHEREOF the parties hereto have caused these presents to be executed in duplicate the year and date first above written.

GENERAL MOTORS CORPORATION

By: James Seaman
GENERAL PURCHASING COMMITTEE

E. I. duPONT deNEMOURS & COMPANY

By: H. B. Belknap

OK - Statham
7-3-1978

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4931

GENERAL MOTORS CORPORATION

7195

October 1925

PURCHASING AGENTS - ALL DIVISIONS

DIVISION	LOCATION	PURCHASING AGENT
A.C. Spark Plug Co.	Flint, Michigan	H.R. Wells
Armstrong Spring Division	Flint, Michigan	T.E. Lang
Brown-Lipe-Chapin	Syracuse, N.Y.	C.A. Lawton
Buick Motor Company	Flint, Michigan	G.G. Allen
Cadillac Motor Company	Detroit, Michigan	D.F. Hulgrave
Chevrolet Motor Company	Flint, Michigan	E.L. Sly
D.P. O'Keefe, Detroit, Mich. has supervision over the following Chev. Pur. Depts:		
Chevrolet Motor Company	Bay City, Michigan	C.E. Keeler
"	Bloomfield, N.J.	~~J.A. Foley~~ R. H. Chalmers.
"	Buffalo, N.Y.	G.H. Domedion
"	Norwood, Ohio	G.E. McPartlin
"	Janesville, Wis.	R.M. Clithero
"	Oakland, Cal.	E.S. Martin
"	St. Louis, Mo.	H.E. Boyer
"	Tarrytown, N.Y.	J.H. Poole
"	Toledo, Ohio	W.E. Beard
" (Gear & Axle)	Detroit, Michigan	F.J. McLaughlin
" (Forge Plant)	Detroit, Michigan	C.E.Randolph
Dayton Engineering Laboratories	Dayton, Ohio	C.H. Kramer
Delco-Light Company	Dayton, Ohio	~~O.G. Caldicott~~ W.E. Kreitzer
General Motors Building Corp.	Detroit, Michigan	H.A. Austin
General Motors Corporation	New York, N.Y.	C.D. Shrady*
~~General Motors of Canada~~	~~Oshawa, Ontario~~	~~R.W. Drew~~
General Motors Corporation	Detroit, Michigan	H.F. Bacall
General Motors Truck Corp.	Pontiac, Michigan	H.J. Crichton
~~Glancy Malleable Corporation~~	~~Waukesha, Wis.~~	~~L.D. Harbrider~~
Harrison Radiator Corporation	Lockport, N.Y.	L.P. Coates
Hyatt Roller Bearings Div	Newark, N.J.	F.A. Weiss
Inland Manufacturing Co.	Dayton, Ohio	J.D. O'Brien
Jaxon Steel Products Co.	Jackson, Michigan	G.W. Clemons
Lancaster Steel Products	Lancaster, Pa.	H.L. McClure
Muncie Products Company	Muncie, Indiana	Earl Wedleke
New Departure Mfg. Co.	Bristol, Conn.	W.A. Kimball
Oakland Motor Car Company	Pontiac, Michigan	C.O. Miller
Olds Motor Works	Lansing, Michigan	W.F. Armstrong
Remy Electric Company	Anderson, Indiana	E.J. O'Donnell
Saginaw Products Company	Saginaw, Michigan	V.E. Libby
~~Samson Tractor Company~~	~~Janesville, Wis.~~	~~S.M. Donnelly (Miss)~~
United Motors Service Co.	Detroit, Michigan	R. C. Campbell
Fisher Body Corp. (Allied)	Detroit, Michigan	J.T. Stratman
Yellow Truck & Coach Mfg. Co.	Chicago, Illinois	W. E. Maun

*C.D. Shrady purchases for: General Motors Corporation, New York
General Motors Building Corp., New York
General Motors Acceptance Corp., New York
General Motors Export Co., New York- C. Nelson
General Exchange Corporation, New York

Yellow Sleeve-Valve Engine Works	E. Moline, Ill.	H. Dahlquist

4993

LIST OF BRANCHES

7196

CAR	CITY	STATE
Buick	Atlanta	Georgia
	Buffalo	New York
	Chicago	Illinois
	Dallas	Texas
	Denver	Colorado
	Detroit	Michigan
	El Paso	Texas
	Flint	Michigan
	Grand Rapids	Michigan
	Indianapolis	Indiana
	Jacksonville	Florida
	Kansas City	Missouri
	Memphis	Tennessee
	Milwaukee	Wisconsin
	New York City	New York
	Oklahoma City	Oklahoma
	Philadelphia	Pennsylvania
	Pittsburgh	Pennsylvania
	San Antonio	Texas
	Washington	District of Columbia
Cadillac	Chicago	Illinois
	Detroit	Michigan
	Philadelphia	Pennsylvania
Oakland	Atlanta	Georgia)
	Oklahoma City	Oklahoma) Retail
	Omaha	Nebraska) Stores
	Spokane	Washington)
Oldsmobile	Atlanta	Georgia
	Chicago	Illinois
	Cincinnati	Ohio
	Dallas	Texas
	Denver	Colorado
	Detroit	Michigan
	Memphis	Tennessee
	Minneapolis	Minnesota
	New York City	New York

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7197

LIST OF BRANCHES

CAR	CITY	STATE
General Motors	Branches:	
Truck	Atlanta	Georgia
	Chicago	Illinois
	Cleveland	Ohio
	Dallas	Texas
	Denver	Colorado
	Idianapolis	Indiana
	Los Angeles	California
	Memphis	Tennessee
	Minneapolis	Minnesota
	New York City	New York
	Philadelphia	Pennsylvania
	Pontiac	Michigan
	St. Louis	Missouri
	San Francisco	California
	Seattle	Washington
	Sub-branches and retail stores:	
	Albany	New York
	Birmingham	Alabama
	Brooklyn	New York
	Bronx	New York
	Charlotte	North Carolina
	Columbus	Ohio
	Dayton	Ohio
	Fort Wayne	Indiana
	Fort Worth	Texas
	Fresno	California
	Jacksonville	Florida
	Louisville	Kentucky
	Milwaukee	Wisconsin
	Newark	New Jersey
	Oakland	California
	Sacramento	California
	St. Paul	Minnesota
	Spokane	Washington
	Tacoma	Washington

CHEVROLET

Zone Offices and Retail Stores

Retail Stores

Broadway,
New York City.

General Motors Building,
Detroit, Michigan.

Zone Offices

Atlanta, Georgia
Baltimore, Maryland
Buffalo, New York
Charlotte, North Carolina
Chicago, Illinois
Dallas, Texas
Denver, Colorado
Des Moines, Iowa
Flint, Michigan
Indianapolis, Indiana
Jacksonville, Florida
Janesville, Wisconsin
Kansas City, Missouri
Los Angeles, California
Louisville, Kentucky
Memphis, Tennessee
Minneapolis, Minnesota
New Orleans, Louisiana
Norwood, Ohio
Oakland, California
Oklahoma City, Oklahoma
Philadelphia, Pennsylvania
Pittsburg, Pennsylvania
Portland, Oregon
St. Louis, Missouri
Tarrytown, New York

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LIST OF BRANCHES

	CITY	STATE
General Motors Acceptance	Atlanta	Georgia
	Boston	Massachusetts
	Buffalo	New York
	Charlotte	North Carolina
	Chicago	Illinois
	Cincinnati	Ohio
	Cleveland	Ohio
	Dallas	Texas
	Dayton	Ohio
	Denver	Colorado
	Detroit	Michigan
	Detroit (Truck)	Michigan
	Indianapolis	Indiana
	Jacksonville	Florida
	Kansas City	Missouri
	Los Angeles	California
	Memphis	Tennessee
	Minneapolis	Minnesota
	New York City	New York
	Oklahoma City	Oklahoma
	Omaha	Nebraska
	Philadelphia	Pennsylvania
	Pittsburgh	Pennsylvania
	Portland	Oregon
	St. Louis	Missouri
	San Francisco	California
	Washington	District of Columbia
	Toronto	Ontario, Canada
	Montreal	Quebec, Canada
	Winnipeg	Manitoba, Canada
	London	England
United Motors Service	Atlanta	Georgia
	Boston	Massachusetts
	Buffalo	New York
	Chicago	Illinois
	Cleveland	Ohio
	Dallas	Texas
	Denver	Colorado
	Detroit	Michigan
	Indianapolis	Indiana
	Kansas City	Missouri
	Los Angeles	California
	Minneapolis	Minnesota
	New Orleans	Louisiana
	New York City	New York
	Omaha	Nebraska
	Philadelphia	Pennsylvania
	St. Louis	Missouri
	San Francisco	California
	Seattle	Washington
	Toronto	Ontario, Canada

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C. P. 18 200 6-26
PRINTED IN U.S.A.

Defendant's Exhibit (GM) No. 185

7200

Agreement, dated the 1st day of January, 1926, between E.I. duPONT deNEMOURS & COMPANY, CHEMICAL PRODUCTS DIV., FLINT PLANT hereinafter called the "Seller," and GENERAL MOTORS CORPORATION DETROIT, MICHIGAN a corporation of DELAWARE hereinafter referred to as the "Buyer," WITNESSETH:

The Seller agrees to sell and the Buyer agrees to purchase, at the price and upon and subject to the following terms and conditions, the following articles, hereinafter referred to as the "articles."

1. DESCRIPTION AND QUANTITIES: PRICE PER

Buyer's requirements of Seller's manufacture of the following paint and varnish type materials, at current prices:

Primer	Glazing Putty	Motor Enamel
Fender Enamel	Chassis Black	Rubber First Coat
Rubbing Compound	Surfacer	Gas Tank Enamel

In addition to the current prices, it is further agreed that the total purchases of the above materials are subject to the sliding scale of discounts for quarterly purchases, as follows:

$50,000	- 5%	$150,000	- 7%
100,000	- 6%	200,000	- 8%

If the quantity discount is earned it is understood that Seller will refund to Buyer at the end of each quarterly period.

It is further agreed that ~~conditions~~ delivery terms applying under this contract will be identically the same as those applying under Seller's contract covering Buyer's requirements of Pyroxylin Finishes including Duco and Duco Thinner.

It is understood that the word "Buyer" used herein shall include all Divisions and affiliated companies of the Buyer in accordance with the list attached hereto and made a part of this agreement.

2. TERMS OF PAYMENT: ~~Net 10th Prox.~~ 1% Cash Discount 25th Prox.

3. F. O. B. As stated above.

4. DELIVERIES: Delivery shall be made between the date hereof and as may be specified from time to time on buyer's regular purchase orders, on or before December 31, 1926. without charge for boxing, crating, cartage or storage, suitably packed to secure lowest transportation cost, and in accordance with the requirements of Common Carriers.

4998

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5. SPECIAL EQUIPMENT: Unless otherwise herein agreed, special dies, tools and patterns used in the manufacture of said articles shall be furnished by and at the expense of the Seller. Said dies, tools and patterns shall be kept in good condition and from time to time, when necessary, shall be replaced by Seller without expense to Buyer. However, the Buyer has the option at any time to reimburse the Seller for the whole or any part of said dies, tools or patterns and replacements and become the owner and entitled to the possession of same. All changes in said dies, tools and patterns, due to the Buyer's change of design or specifications shall be paid for by the Buyer.

6. SPECIFICATIONS: Said articles shall be according to specifications, drawings, samples, or other description furnished or adopted by the Buyer.

7. WARRANTIES: The Seller warrants articles supplied under this contract to conform to specifications herein, to be fit and sufficient for the purpose intended, merchantable, of good material and workmanship, and free from defect.

8. INSPECTION AND REJECTIONS: All articles shall be subject to the Buyer's inspection within a reasonable time after delivery, irrespective of date of payment thereof, but the Buyer shall promptly notify the Seller of any defects detected and hold any articles so claimed to be defective for the Seller's instructions and at his risk, for a reasonable period, not to exceed 60 days.

9. PATENT PROTECTION: The Seller warrants that the articles purchased hereunder do not and will not infringe any Letters Patent granted by the United States of America or by any country foreign thereto. The Seller covenants and agrees to save harmless and protect the Buyer, its successors, assigns, customers and users of its product, against any claim or demand based upon such infringement, and after notice, to appear and defend at its own expense any suits at law or in equity arising therefrom.

If said articles are protected by one or more patents, and a decree or judgment be entered in a court of competent jurisdiction holding any such patent or its claim invalid, or so limited in scope as to impair its protection commercially, this contract may forthwith be cancelled.

10. NON-PERFORMANCE EXCUSED: The Seller shall not be responsible for delays or defaults in deliveries, nor the Buyer for failure to receive, if occasioned by wars, strikes, fires, the act of God or the public enemy, labor or transportation difficulties or other causes beyond their control.

11. INSOLVENCY AND CANCELLATION: In the event of any proceedings by or against either party, voluntary or involuntary, in bankruptcy or insolvency, or for the appointment of a receiver or trustee or an assignee for the benefit of creditors, of the property of either party, or in the event of the breach of any of the terms hereof, including the warranties of the Seller, the other party shall be entitled to cancel this contract forthwith.

12. REMEDIES, ETC: The remedies herein reserved shall be cumulative, and additional to any other or further remedies provided in law or equity. No waiver of a breach of any provision of this contract shall constitute a waiver of any other breach or of such provision. Except as expressed herein, there are no antecedent or other agreements respecting the subject matter hereof; any modifications or variations of this contract, to be binding, shall be in writing, executed in behalf of the parties by like authority as this contract.

13. THE SELLER shall not, without first obtaining the written consent of the Buyer, in any manner advertise or publish the fact that the Seller has contracted to furnish Buyer the articles herein mentioned, and for failure to observe this provision Buyer shall have the right to cancel this contract without any further liability thereon.

14. MICHIGAN CONTRACT AND NON-ASSIGNMENT: This contract is to be construed according to the laws of the State of Michigan and is non-assignable by the Seller.

15. IN WITNESS WHEREOF the parties hereto have caused these presents to be executed in duplicate the year and date first above written.

GENERAL MOTORS CORPORATION

By: James Lynah
GENERAL PURCHASING COMMITTEE

E. I. duPONT de NEMOURS & COMPANY

By: W. F. Klinger
Manager, Automotive Sales

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GENERAL MOTORS CORPORATION

December ~~October~~ 1925

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PURCHASING AGENTS - ALL DIVISIONS

DIVISION	LOCATION	PURCHASING AGENT
A.C. Spark Plug Co.	Flint, Michigan	H.R. Wells
Armstrong Spring Division	Flint, Michigan	T.E. Lang
Brown-Lipe-Chapin	Syracuse, N.Y.	C.A. Lawton
Buick Motor Company	Flint, Michigan	G.G. Allen
Cadillac Motor Company	Detroit, Michigan	D.F. Hulgrave
Chevrolet Motor Company	Flint, Michigan	E.L. Sly
D.P. O'Keefe, Detroit, Mich. has supervision over the following Chev. Pur. Depts:		
Chevrolet Motor Company	Bay City, Michigan	C.E. Keeler
"	Bloomfield, N.J.	~~J.A. Foley~~ L.U Chalmers
"	Buffalo, N.Y.	G.H. Domedion
"	Norwood, Ohio	G.E. McPartlin
"	Janesville, Wis.	R.M. Clithero
"	Oakland, Cal.	E.S. Martin
"	St. Louis, Mo.	H.B. Boyer
"	Tarrytown, N.Y.	J.H. Poole
"	Toledo, Ohio	W.E. Beard
" (Gear & Axle)	Detroit, Michigan	F.J. McLaughlin
" (Forge Plant)	Detroit, Michigan	C.E.Randolph
Dayton Engineering Laboratories	Dayton, Ohio	C.H. Kramer
Delco-Light Company	Dayton, Ohio	~~O.C. Callison~~ W.E. Kreitzer
General Motors Building Corp.	Detroit, Michigan	H.A. Austin
General Motors Corporation	New York, N.Y.	C.D. Shrady*
~~General Motors of Canada~~	~~Oshawa, Ontario~~	~~E.W. Drew~~
General Motors Corporation	Detroit, Michigan	H.F. Bacall
General Motors Truck Corp.	Pontiac, Michigan	H.J. Crichton
~~Glancy Malleable Corporation~~	~~Waukesha, Wis.~~	~~L.D. Herbrider~~
Harrison Radiator Corporation	Lockport, N.Y.	L.P. Coates
Hyatt Roller Bearings Div	Newark, N.J.	F.A. Weiss
Inland Manufacturing Co.	Dayton, Ohio	J.D. O'Brien
Jaxon Steel Products Co.	Jackson, Michigan	G.W. Clemons
Lancaster Steel Products	Lancaster, Pa.	H.L. McClure
Muncie Products Company	Muncie, Indiana	Earl Wedlake
New Departure Mfg. Co.	Bristol, Conn.	W.A. Kimball
Oakland Motor Car Company	Pontiac, Michigan	C.O. Miller
Olds Motor Works	Lansing, Michigan	W.F. Armstrong
Remy Electric Company	Anderson, Indiana	F.J. O'Donnell
Saginaw Products Company	Saginaw, Michigan	V.E. Libby
~~Samson Tractor Company~~	~~Janesville, Wis.~~	~~S.M. Donnelly (Miss)~~
United Motors Service Co.	Detroit, Michigan	R. C. Campbell
Fisher Body Corp. (Allied)	Detroit, Michigan	J.T. Stratman
Yellow Truck & Coach Mfg. Co.	Chicago, Illinois	W. E. Laun

*C.D. Shrady purchases for: General Motors Corporation, New York
General Motors Building Corp., New York
General Motors Acceptance Corp., New York
General Motors Export Co., New York
General Exchange Corporation, New York

Yellow Sleeve-Valve Engine Works East Moline, Ill. H. Dahlquist

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LIST OF BRANCHES

CAR	CITY	STATE
Buick	Atlanta	Georgia
	Buffalo	New York
	Chicago	Illinois
	Dallas	Texas
	Denver	Colorado
	Detroit	Michigan
	El Paso	Texas
	Flint	Michigan
	Grand Rapids	Michigan
	Indianapolis	Indiana
	Jacksonville	Florida
	Kansas City	Missouri
	Memphis	Tennessee
	Milwaukee	Wisconsin
	New York City	New York
	Oklahoma City	Oklahoma
	Philadelphia	Pennsylvania
	Pittsburgh	Pennsylvania
	San Antonio	Texas
	Washington	District of Columbia
Cadillac	Chicago	Illinois
	Detroit	Michigan
	Philadelphia	Pennsylvania
Oakland	Atlanta	Georgia)
	Oklahoma City	Oklahoma) Retail
	Omaha	Nebraska) Stores
	Spokane	Washington)
Oldsmobile	Atlanta	Georgia
	Chicago	Illinois
	Cincinnati	Ohio
	Dallas	Texas
	Denver	Colorado
	Detroit	Michigan
	Memphis	Tennessee
	Minneapolis	Minnesota
	New York City	New York

LIST OF BRANCHES

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CAR	CITY	STATE
General Motors Truck	**Branches:**	
	Atlanta	Georgia
	Chicago	Illinois
	Cleveland	Ohio
	Dallas	Texas
	Denver	Colorado
	Idianapolis	Indiana
	Los Angeles	California
	Memphis	Tennessee
	Minneapolis	Minnesota
	New York City	New York
	Philadelphia	Pennsylvania
	Pontiac	Michigan
	St. Louis	Missouri
	San Francisco	California
	Seattle	Washington
	Sub-branches and retail stores:	
	Albany	New York
	Birmingham	Alabama
	Brooklyn	New York
	Bronx	New York
	Charlotte	North Carolina
	Columbus	Ohio
	Dayton	Ohio
	Fort Wayne	Indiana
	Fort Worth	Texas
	Fresno	California
	Jacksonville	Florida
	Louisville	Kentucky
	Milwaukee	Wisconsin
	Newark	New Jersey
	Oakland	California
	Sacramento	California
	St. Paul	Minnesota
	Spokane	Washington
	Tacoma	Washington

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CHEVROLET

Zone Offices and Retail Stores

Retail Stores

Broadway,
New York City.

General Motors Building,
Detroit, Michigan.

Zone Offices

Atlanta, Georgia
Baltimore, Maryland
Buffalo, New York
Charlotte, North Carolina
Chicago, Illinois
Dallas, Texas
Denver, Colorado
Des Moines, Iowa
Flint, Michigan
Indianapolis, Indiana
Jacksonville, Florida
Janesville, Wisconsin
Kansas City, Missouri
Los Angeles, California
Louisville, Kentucky
Memphis, Tennessee
Minneapolis, Minnesota
New Orleans, Louisiana
Norwood, Ohio
Oakland, California
Oklahoma City, Oklahoma
Philadelphia, Pennsylvania
Pittsburg, Pennsylvania
Portland, Oregon
St. Louis, Missouri
Tarrytown, New York

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	CITY	STATE
General Motors Acceptance	Atlanta	Georgia
	Boston	Massachusetts
	Buffalo	New York
	Charlotte	North Carolina
	Chicago	Illinois
	Cincinnati	Ohio
	Cleveland	Ohio
	Dallas	Texas
	Dayton	Ohio
	Denver	Colorado
	Detroit	Michigan
	Detroit (Truck)	Michigan
	Indianapolis	Indiana
	Jacksonville	Florida
	Kansas City	Missouri
	Los Angeles	California
	Memphis	Tennessee
	Minneapolis	Minnesota
	New York City	New York
	Oklahoma City	Oklahoma
	Omaha	Nebraska
	Philadelphia	Pennsylvania
	Pittsburgh	Pennsylvania
	Portland	Oregon
	St. Louis	Missouri
	San Francisco	California
	Washington	District of Columbia
	Toronto	Ontario, Canada
	Montreal	Quebec, Canada
	Winnipeg	Manitoba, Canada
	London	England
United Motors Service	Atlanta	Georgia
	Boston	Massachusetts
	Buffalo	New York
	Chicago	Illinois
	Cleveland	Ohio
	Dallas	Texas
	Denver	Colorado
	Detroit	Michigan
	Indianapolis	Indiana
	Kansas City	Missouri
	Los Angeles	California
	Minneapolis	Minnesota
	New Orleans	Louisiana
	New York City	New York
	Omaha	Nebraska
	Philadelphia	Pennsylvania
	St. Louis	Missouri
	San Francisco	California
	Seattle	Washington
	Toronto	Ontario, Canada

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Defendant's Exhibit (GM) No. 186

7207

Agreement, dated the ....1st.....day of.....January....., 192.7.., between .....E.I..DUPONT.DENEMOURS.&.COMPANY,..CHEMICAL.PRODUCTS.DIV.,.FLINT,.MICH. hereinafter called the "Seller," and .....GENERAL.MOTORS.CORPORATION..... .....DETROIT,.MICHIGAN.....a corporation of ..DELAWARE.....hereinafter referred to as the "Buyer," WITNESSETH;

The Seller agrees to sell and the Buyer agrees to purchase, at the price and upon and subject to the following terms and conditions, the following articles, hereinafter referred to as the "articles."

1. DESCRIPTION AND QUANTITIES: PRICE PER

Buyer's requirements of Seller's make of Pyroxylin Finishes, including Duco and Duco Thinner, at the following prices:

Duco - All standard shades	5-Gal. Cans	$4.00	per Gal.
" - Maroon	" "	6.00	" "
Striping Duco - all standard shades	" "	4.60	" "
" " - Maroon	" "	6.50	" "
Duco Thinner - 3614	Drums	1.20	" "
" " 3601	"	1.50	" "
Striping Duco Thinner - 3610	"	1.50	" "

Duco Thinner in Tank Cars - six cents per gallon less than in Drums.
For General Motors Export Company's requirements, an additional charge of 15¢ per gallon will be made.

The above prices subject to the usual differential for smaller packages and are also subject to change providing Seller gives Buyer 30 days' notice before change goes into effect.

The above prices include deliveries to factory branches upon orders received from the Purchasing Department of the Buyer's factory owning or controlling the branches to which deliveries are specified to be made.

The above prices are also subject to the following schedule of quantity discounts from invoices rendered in any quarter of the calendar years

(OVER)

2. TERMS OF PAYMENT:....1% Cash - 25th Prox.....
.....
.....

3. F. O. B....Cars,.city.in.which.Buyer's.Division.is.located,.with.exceptions.as ....noted.hereinafter.....

4. DELIVERIES: Delivery shall be made between the date hereof and..December.31,.1927.....as may be specified from time to time on buyer's regular purchase orders, on or before.December.31,.1927. without charge for boxing, crating, cartage or storage, suitably packed to secure lowest transportation cost and in accordance with the requirements of Common Carriers.

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$ 25,000 - 1%	$225,000 - 6-1/4%	450,000 - 8-1/4%
50,000 - 2%	250,000 - 6-1/2%	500,000 - 8-1/2%
75,000 - 3%	275,000 - 6-3/4%	550,000 - 8-3/4%
100,000 - 4%	300,000 - 7%	600,000 - 9%
125,000 - 4-1/2%	325,000 - 7-1/4%	650,000 - 9-1/4%
150,000 - 5%	350,000 - 7-1/2%	700,000 - 9-1/2%
175,000 - 5-1/2%	375,000 - 7-3/4%	750,000 - 9-3/4%
200,000 - 6%	400,000 - 8%	800,000 - 10%

The Seller agrees to apply purchases in excess of $800,000 in any quarter to any quarter during the year's period which may fall short of $800,000.

Assuming that the aggregate purchases of any one quarter will total $200,000, it is agreed that 6% will show on the face of all invoices. In the event the volume of purchases is greater than $200,000 in any quarter, the difference between the percentage of discount earned and the 6% will be refunded by Seller in the form of a credit memorandum at the end of the quarter.

If the 6% is not earned, Buyer will then refund to Seller accordingly, the refund to be based on the foregoing quantity discount schedule.

It is understood that the word "Buyer" used herein shall include all Divisions and affiliated companies of the Buyer in accordance with the list attached hereto and made a part of this agreement.

It is further agreed that containers are to be returned to Seller F.O.B. Buyer's Plants.

On shipments by rail to Oakland, Cal., or other points west of St. Louis, Mo., Seller will allow freight to St. Louis. On the return of empty containers from these points Seller will allow freight from St. Louis to Seller's Plant.

In case shipments are made via boat from Seller's Plant to Oakland, Cal., and other points west of St. Louis, Mo., full freight will be allowed, as well as on the return shipments via boat of empty containers.

On shipments to General Motors Export Company F.O.B. Docks, New York City.

It is further agreed that No. 3942 Retarder or any other product classed as Duco will be included in the quantity subject to the foregoing discount schedule.

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5. SPECIAL EQUIPMENT: Unless otherwise herein agreed, special dies, tools and patterns used in the manufacture of said articles shall be furnished by and at the expense of the Seller. Said dies, tools and patterns shall be kept in good condition and from time to time, when necessary, shall be replaced by Seller without expense to Buyer. However, the Buyer has the option at any time to reimburse the Seller for the whole or any part of said dies, tools or patterns and replacements and become the owner and entitled to the possession of same. All changes in said dies, tools and patterns, due to the Buyer's change of design or specifications shall be paid for by the Buyer.

6. SPECIFICATIONS: Said articles shall be according to specifications, drawings, samples, or other description furnished or adopted by the Buyer.

7. WARRANTIES: The Seller warrants articles supplied under this contract to conform to specifications herein, to be fit and sufficient for the purpose intended, merchantable, of good material and workmanship, and free from defect.

8. INSPECTION AND REJECTIONS: All articles shall be subject to the Buyer's inspection within a reasonable time after delivery, irrespective of date of payment thereof, but the Buyer shall promptly notify the Seller of any defects detected and hold any articles so claimed to be defective for the Seller's instructions and at his risk, for a reasonable period, not to exceed 60 days.

9. PATENT PROTECTION: The Seller warrants that the articles purchased hereunder do not and will not infringe any Letters Patent granted by the United States of America or by any country foreign thereto. The Seller covenants and agrees to save harmless and protect the Buyer, its successors, assigns, customers and users of its product, against any claim or demand based upon such infringement, and after notice, to appear and defend at its own expense any suits at law or in equity arising therefrom.

If said articles are protected by one or more patents, and a decree or judgment be entered in a court of competent jurisdiction holding any such patent or its claim invalid, or so limited in scope as to impair its protection commercially, this contract may forthwith be cancelled.

10. NON-PERFORMANCE EXCUSED: The Seller shall not be responsible for delays or defaults in deliveries, nor the Buyer for failure to receive, if occasioned by wars, strikes, fires, the act of God or the public enemy, labor or transportation difficulties or other causes beyond their control.

11. INSOLVENCY AND CANCELLATION: In the event of any proceedings by or against either party, voluntary or involuntary, in bankruptcy or insolvency, or for the appointment of a receiver or trustee or an assignee for the benefit of creditors, of the property of either party, or in the event of the breach of any of the terms hereof, including the warrants of the Seller, the other party shall be entitled to cancel this contract forthwith.

12. REMEDIES, ETC.: The remedies herein reserved shall be cumulative, and additional to any other or further remedies provided in law or equity. No waiver of a breach of any provision of this contract shall constitute a waiver of any other breach or of such provision. Except as expressed herein, there are no antecedents or other agreements respecting the subject matter hereof; any modifications or variations of this contract, to be binding, shall be in writing, executed in behalf of the parties by like authority as this contract.

13. THE SELLER shall not, without first obtaining the written consent of the Buyer, in any manner advertise or publish the fact that the Seller has contracted to furnish Buyer the articles herein mentioned, and for failure to observe this provision Buyer shall have the right to cancel this contract without any further liability thereon.

14. MICHIGAN CONTRACT AND NON-ASSIGNMENT: This contract is to be construed according to the laws of the State of Michigan and is non-assignable by the Seller.

15. IN WITNESS WHEREOF the parties hereto have caused these presents to be executed in duplicate the year and date first above written.

GENERAL MOTORS CORPORATION

By: James Sparrah
GENERAL PURCHASING COMMITTEE

E.I. du PONT de NEMOURS & COMPANY

By: W. F. Schlicht
Mgr. Automotive Sales

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November 1926.

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GENERAL MOTORS CORPORATION

DIVISION	LOCATION	PURCHASING AGENT
A.C. Spark Plug Co.	Flint, Michigan	H. R. Wells
Armstrong Spring Division	Flint, Michigan	T. E. Lang
Brown-Lipe-Chapin Division	Syracuse, N.Y.	C. A. Lawton
Buick Motor Company	Flint, Michigan	G. G. Allen
Cadillac Motor Company	Detroit, Michigan	D. F. Hulgrave
Chevrolet Motor Company	Detroit, Michigan	D. P. O'Keefe
"	Bay City, Mich.	C. E. Keeler
"	Flint, Michigan	E. L. Sly
"	Toledo, Ohio	A. A. Bronson
" (Gear & Axle)	Detroit, Michigan	F. J. McLaughlin
" (Forge Plant)	Detroit, Michigan	C. E. Randolph
Mr. O'Keefe, Chevrolet Central Office, has supervision over the following:		
Chevrolet Motor Company	Bloomfield, N.J.	J. A. Foley
"	Buffalo, N.Y.	G. H. Domedion
"	Norwood, Ohio	G. E. McPartlin
"	Janesville, Wis.	R. E. Clithero
"	Oakland, Cal.	E. S. Martin
"	St. Louis, Mo.	H. B. Boyer
"	Tarrytown, N. Y.	R. E. Lewis
Dayton Engineering Laboratories	Dayton, Ohio	C. H. Kramer
Delco-Light Company	Dayton, Ohio	W. E. Kreitzer
Fisher Body Corporation	Detroit, Michigan	J. T. Stratman, Central Office.
"	Flint, Mich. Plant #1	
"	Lansing, Michigan	
"	Pontiac, Michigan	
"	Buffalo, N.Y.	C. A. Crusoe, Central Office
"	Cleveland, Ohio	
"	Flint, Mich. Plant #2	
"	Janesville, Wis.	
"	Memphis, Tenn.	
"	Oakland, Cal.	
"	St. Louis, Mo.	
"	Tarrytown, N.Y.	
"	Norwood, Ohio	
National Plate Glass Co.	Blairsville, Pa.	Paul Nesbit, Detroit, Mich.
"	Detroit, Mich.	
"	Saginaw, Mich.	
"	Ottawa, Ill.	
Fernstedt Mfg. Company	Detroit, Mich.	H. O. Buelteman
Broadbrook Mfg. Company	Broadbrook, Conn.	H. C. Brook
Fleetwood Metal Body Company	Fleetwood, Pa.	A. J. Schlagel.
General Motors Building Corp.	Detroit, Michigan	H. F. Bacall
General Motors Corporation	Detroit, Michigan	H. F. Bacall

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General Motors Corporation	New York, N.Y.	C. D. Shrady, New York Office
General Motors Building Corp.	New York, N.Y.	
General Motors Acceptance Corp.	New York, N.Y.	
General Motors Export Co.	New York, N.Y.	
General Exchange Corp.	New York, N.Y.	
General Motors of Canada	Oshawa, Ontario	E. W. Drew
General Motors Truck Corp.	Pontiac, Mich.	H. J. Crichton
Harrison Radiator Corp.	Lockport, N.Y.	L. P. Coates
Hyatt Roller Bearings Div.	Harrison, N.J.	F. A. Weiss
Inland Manufacturing Co.	Dayton, Ohio	J. D. O'Brien
Jaxon Steel Products Co.	Jackson, Mich.	G. W. Clemons
Muncie Products Co.	Muncie, Indiana	Earl Wedlake
New Departure Mfg. Co.	Bristol, Conn.	W. A. Kimball
Oakland Motor Car Company	Pontiac, Mich.	C. O. Miller
Olds Motor Works	Lansing, Mich.	W. F. Armstrong
Remy Electric Company	Anderson, Indiana	F. J. O'Donnell
Saginaw Products Co.	Saginaw, Mich.	V. E. Libby
United Motors Service	Detroit, Mich.	R. C. Campbell
Yellow Truck & Coach Mfg. Co. (Allied)	Chicago, Illinois	W. B. Livingston
Yellow Sleeve-Valve Engine Works "	East Moline, Ill.	H. Dahlquist

Agreement, dated the ....first.....day of...January....., 192.8.., between ..I. duPONT deNEMOURS & COMPANY, CHEMICAL PRODUCTS DIVISION, DETROIT, MICHIGAN, hereinafter called the "Seller," and .....GENERAL MOTORS CORPORATION..... .....DETROIT, MICHIGAN.....a corporation of DELAWARE,.....hereinafter referred to as the "Buyer," WITNESSETH;

The Seller agrees to sell and the Buyer agrees to purchase, at the price and upon and subject to the following terms and conditions, the following articles, hereinafter referred to as the "articles."

1. DESCRIPTION AND QUANTITIES: PRICE PER

Buyer's requirements of Seller's make of Pyroxylin Finishes, including Duco, at the following prices:

Duco - All Standard Shades	-	5-gallon cans	-	$3.00 per gallon.
" - Maroons	-	" "	-	$5.00 " "
" - Whites	-	" "	-	$3.25 " "
" - Black	-	" "	-	$2.85 " "
Striping Duco -				
All Standard Shades	-	5-gallon cans	-	$6.00 " "
Black	-	" "	-	$5.00 " "
Maroon	-	" "	-	$8.00 " "

The above prices are subject to the following schedule of quantity discounts from invoices rendered during any quarter of the calendar year:

$100,000.	- 4%
125,000.	- 5%
150,000.	- 6%
175,000.	- 7%
200,000.	- 8%

Assuming that the aggregate purchases made during any quarter will reach $150,000., Seller agrees to allow 6% on the face of all invoices rendered. It is further agreed that if the 6% is not earned, Buyer will then refund to Seller accordingly the refund to be based on the foregoing quantity discount schedule. The Seller further agrees to apply purchases in excess of the above amounts subject to the discount in any quarter to any quarter during the period of the contract which may fall short of the above amounts subject to the discount. If Buyer's purchases reach $200,000.00 during any quarter, Seller agrees to extend the discount on the above items to 8%. Assuming that the aggregate purchases made during any quarter will be of sufficient volume to earn the maximum discount, Seller agrees to issue monthly credits extending discounts to 8%.

(O-V-E-R)

2. TERMS OF PAYMENT: 1% Cash - 25th Prox.....

3. F. O. B. Cars, city in which Buyer's Division is located, with exceptions as noted hereinafter.

4. DELIVERIES: Delivery shall be made between the date hereof and December 31, 1928 as may be specified from time to time on buyer's regular purchase orders, on or before December 31 1928 without charge for boxing, crating, cartage or storage, suitably packed to secure lowest transportation cost and in accordance with the requirements of Common Carriers.

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is further agreed that Seller's make of Chassis Black Lacquer, "Engenamel", and Motor Lacquers are not included in the above discount arrangement.

It is further agreed that Seller will furnish Buyer the following Thinners at the net prices shown:

	Billing Prices	Net Prices
#3614 - in drums	$1.00 per gal.	$ .845 per gal.
#3627 - in drums	1.20 " "	.82 " "
#3634 - in drums	1.20 " "	.915 " "
#3637 - in drums	1.00 " "	.695 " "

(The above thinners in tank cars - 2¢ per gallon less than in drums.)

It is further agreed that Seller will render invoices at the above billing prices, but will reduce these prices to the above net basis by special adjustment at the end of each month. It is further agreed that for Buyer's Export Company's requirements an additional charge of 15¢ per gallon on all Pyroxylin Finishes and Thinners will be made. It is further agreed that all the above prices are subject to the usual differential for smaller packages and are also subject to change, providing Seller gives Buyer thirty days' notice before change goes into effect.

The above prices include deliveries to factory branches upon orders received from the Purchasing Department of the Buyer's factory owning or controlling the branches to which deliveries are specified to be made.

It is understood that the word "Buyer" used herein shall include all Divisions and affiliated companies of the Buyer in accordance with the list attached hereto and made a part of this agreement.

It is further agreed that containers are to be returned to Seller F.O.B. Buyer's Plants.

On shipments by rail to Oakland, Cal., or other points west of St.Louis, Mo., Seller will allow freight to St.Louis. On the return of empty containers from these points, Seller will allow freight from St.Louis to Seller's Plant.

In case shipments are made via boat from Seller's Plant to Oakland, Cal., and other points west of St.Louis, Mo., full freight will be allowed, as well as on the return shipments via boat of empty containers.

On shipments to General Motors Export Company: F.O.B. Docks, New York City.

It is further agreed that No. 3942 Retarder or any other product classed as Duco will be included in the quantity subject to the foregoing discount schedule.

May 1927.

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GENERAL MOTORS CORPORATION

DIVISION	LOCATION	PURCHASING AGENT
A.C. Spark Plug Co.	Flint, Michigan	H. R. Wells
Armstrong Spring Division	Flint, Michigan	T. E. Lang
Brown-Lipe-Chapin Division	Syracruse, N.Y.	C. A. Lawton
Buick Motor Company	Flint, Michigan	G. G. Allen
Cadillac Motor Company	Detroit, Michigan	D. F. Hulgrave
Chevrolet Motor Company	Detroit, Michigan	D. P. O'Keefe
"	Bay City, Mich.	C. E. Keeler
"	Flint, Michigan	E. L. Sly
"	Toledo, Ohio	A. A. Bronson
" (Gear & Axle)	Detroit, Michigan	F. J. McLaughlin
" (Forge Plant)	Detroit, Michigan	C. E. Randolph
Mr. O'Keefe, Chevrolet Central Office, has supervision over the following:		
Chevrolet Motor Company	Bloomfield, N.J.	J. A. Foley
"	Buffalo, N.Y.	G. H. Domedion
"	Norwood, Ohio	G. E. McPartlin
"	Janesville, Wis.	R. E. Clithero
"	Oakland, Cal.	E. S. Martin
"	St. Louis, Mo.	H. B. Boyer
"	Tarrytown, N. Y.	R. E. Lewis
Ioco-Light Company	Dayton, Ohio	~~W. B. Kreitzer~~ M.L.Fischer
Delco-Remy Corporation	Anderson, Indiana	F. J. O'Donnell
Fisher Body Corporation	Detroit, Michigan	)
"	Flint, Mich. Plant #1	) J. T. Stratman
"	Lansing, Michigan	) Central Office
"	Pontiac, Michigan	)
"	Buffalo, N.Y.	)
"	Cleveland, Ohio	)
"	Flint, Mich. Plant #2	)
"	Janesville, Wis.	) C. A. Crusoe,
"	Memphis, Tenn.	) Central Office
"	Oakland, Cal.	)
"	St. Louis, Mo.	)
"	Tarrytown, N.Y.	)
"	Norwood, Ohio	)
National Plate Glass Co.	Blairsville, Pa.	)
"	Detroit, Mich.	) Paul Nesbit,
"	Saginaw, Mich.	) Detroit, Mich.
"	Ottawa, Ill.	)
Ternstedt Mfg. Company	Detroit, Mich.	E. W. Sturgeon
Broadbrook Mfg. Company	Broadbrook, Conn.	H. C. Brook
Fleetwood Metal Body Company	Fleetwood, Pa.	A. J. Schlagel
General Motors Building Corp.	Detroit, Michigan	H. F. Bacall
General Motors Corporation	Detroit, Michigan	H. F. Bacall

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General Motors Corporation	New York, N.Y.	)
General Motors Building Corp.	New York, N.Y.	)
General Motors Acceptance Corp.	New York, N.Y.	) C. D. Shrady,
General Motors Export Co.	New York, N.Y.	) New York Office
General Exchange Corp.	New York, N.Y.	)
~~General Motors of Canada~~	~~Oshawa, Ontario~~	~~E. W. Drew,~~
General Motors Truck Corp.	Pontiac, Mich.	H. J. Crichton
Harrison Radiator Corp.	Lockport, N.Y.	G. H. Hetley
Hyatt Roller Bearings Div.	Harrison, N.J.	F. A. Weiss
Inland Manufacturing Co.	Dayton, Ohio	J. D. O'Brien
Jaxon Steel Products Co.	Jackson, Mich.	G. W. Clemons
Muncie Products Co.	Muncie, Indiana	Earl Wedlake
New Departure Mfg. Co.	Bristol, Conn.	W. A. Kimball
Oakland Motor Car Company	Pontiac, Mich.	C. O. Miller
Olds Motor Works	Lansing, Mich.	W. F. Armstrong
Saginaw Products Co.	Saginaw, Mich.	V. E. Libby
United Motors Service	Detroit, Mich.	R. C. Campbell
Yellow Truck & Coach Mfg. Co. (Allied)	Chicago, Illinois	W. B. Livingston
Yellow Sleeve-Valve Engine Works "	East Moline, Ill.	H. Dahlquist
Frigidaire Corporation	Dayton, Ohio	W. E. Kreitzer

5. SPECIAL EQUIPMENT: Unless otherwise herein agreed, special dies, tools and patterns used in the manufacture of said articles shall be furnished by and at the expense of the Seller. Said dies, tools and patterns shall be kept in good condition and from time to time, when necessary, shall be replaced by Seller without expense to Buyer. However, the Buyer has the option at any time to reimburse the Seller for the whole or any part of said dies, tools or patterns and replacements and become the owner and entitled to the possession of same. All changes in said dies, tools and patterns, due to the Buyer's change of design or specifications shall be paid for by the Buyer.

6. SPECIFICATIONS: Said articles shall be according to specifications, drawings, samples, or other description furnished or adopted by the Buyer.

7. WARRANTIES: The Seller warrants articles supplied under this contract to conform to specifications herein, to be fit and sufficient for the purpose intended, merchantable, of good material and workmanship, and free from defect.

8. INSPECTION AND REJECTIONS: All articles shall be subject to the Buyer's inspection within a reasonable time after delivery, irrespective of date of payment thereof, but the Buyer shall promptly notify the Seller of any defects detected and hold any articles so claimed to be defective for the Seller's instructions and at his risk, for a reasonable period, not to exceed 60 days.

9. PATENT PROTECTION: The Seller warrants that the articles purchased hereunder do not and will not infringe any Letters Patent granted by the United States of America or by any country foreign thereto. The Seller covenants and agrees to save harmless and protect the Buyer, its successors, assigns, customers and users of its product, against any claim or demand based upon such infringement, and after notice, to appear and defend at its own expense any suits at law or in equity arising therefrom.

If said articles are protected by one or more patents, and a decree or judgment be entered in a court of competent jurisdiction holding any such patent or its claim invalid, or so limited in scope as to impair its protection commercially, this contract may forthwith be cancelled.

10. NON-PERFORMANCE EXCUSED: The Seller shall not be responsible for delays or defaults in deliveries, nor the Buyer for failure to receive, if occasioned by wars, strikes, fires, the act of God or the public enemy, labor or transportation difficulties or other causes beyond their control.

11. INSOLVENCY AND CANCELLATION: In the event of any proceedings by or against either party, voluntary or involuntary, in bankruptcy or insolvency, or for the appointment of a receiver or trustee or an assignee for the benefit of creditors, of the property of either party, or in the event of the breach of any of the terms hereof, including the warrants of the Seller, the other party shall be entitled to cancel this contract forthwith.

12. REMEDIES, ETC.: The remedies herein reserved shall be cumulative, and additional to any other or further remedies provided in law or equity. No waiver of a breach of any provision of this contract shall constitute a waiver of any other breach or of such provision. Except as expressed herein, there are no antecedents or other agreements respecting the subject matter hereof; any modifications or variations of this contract, to be binding, shall be in writing, executed in behalf of the parties by like authority as this contract.

13. THE SELLER shall not, without first obtaining the written consent of the Buyer, in any manner advertise or publish the fact that the Seller has contracted to furnish Buyer the articles herein mentioned, and for failure to observe this provision Buyer shall have the right to cancel this contract without any further liability thereon.

14. MICHIGAN CONTRACT AND NON-ASSIGNMENT: This contract is to be construed according to the laws of the State of Michigan and is non-assignable by the Seller.

15. IN WITNESS WHEREOF the parties hereto have caused these presents to be executed in duplicate the year and date first above written.

GENERAL MOTORS CORPORATION

BY: James Seymour
GENERAL PURCHASING COMMITTEE

E. I. duPONT deNEMOURS & COMPANY

BY: W. F. Klingler
Mgr. Automotive Sales

Defendant's Exhibit (GM) No. 188

7217

Agreement, dated the first day of January 19 29, between

I. duPont deNemours & Company, Wilmington, Delaware

hereinafter called the "Seller," and

General Motors Corporation, Detroit, Michigan a corporation of

Delaware hereinafter referred to as the "Buyer," WITNESSETH:

The Seller agrees to sell and the Buyer agrees to purchase, at the price and upon and subject to the following terms and conditions, the following articles, hereinafter referred to as the "articles."

1. DESCRIPTION AND QUANTITIES: PRICE PER

General Motors' requirements of Seller's make of DUX materials as noted below, and Pyroxylin Finishes including Duco at the following prices:

All 244 Line Black Duco in 5 gal. cans	@ $2.60 per gal. less 10%.
All 244 Line Maroon Duco in 5 gal. cans	@ 4.75 per gal. less 10%.
All 244 Line White Duco in 5 gal. cans	@ 3.10 per gal. less 10%.
All 244 Line Standard Duco Colors (excepting Black, Maroon, White) in 5 gal. cans -	@ 2.75 per gal. less 10%.
All 246 Line Standard Duco Colors (Heavy Solids) with the exception of Black, Maroon and White in 5 gal. cans	@ 3.05 per gal. less 10%.

Above subject to a further reduction of $.15 per gal. if shipped in bbls.
Duco or Striping Colors in packages smaller than 5 gal. cans are subject to the usual differential now in force.

All 210 Standard Striping Colors	- 1 gal. cans $6.15 - quarts $1.75 - each less 10%.
All 210 Black Striping Colors	- 1 gal. cans 5.15 - quarts 1.50 - each less 10%.
All 210 Maroon Striping Colors	- 1 gal. cans 8.15 - quarts 2.25 - each less 10%.

#3601 Duco Thinner in drums	- $1.00 per gal. net.
#3634 Duco Thinner in drums	- .86 per gal. net.
#3614 Duco Thinner in drums	- .815 per gal. net.
#3637 Duco Thinner in drums	- .65 per gal. net.

Tank car shipments of any of above Thinners take a reduction of $.02 per gal.

Thinner prices subject to change upon thirty days' notice.

2. TERMS OF PAYMENT: 1% cash 25th prox.

3. F. O. B. Cars - city in which Buyer's Division is located with exceptions as noted hereinafter.

4. DELIVERIES: Delivery shall be made between the date hereof and February 28th, 1930 as may be specified from time to time on Buyer's regular purchase orders, on or before December 31st, 1929 without charge for boxing, crating, cartage or storage, suitably packed to secure lowest transportation cost and in accordance with the requirements of Common Carriers.

(over)

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Pyroxylin Surfacer in drums	- 2.25 per gal. less 10%.
#3942 Retarder in drums	- 2.00 per gal. less 10%.

Any other product classed as Duco will be subject to a trade discount of 10%.

DUX Oxide Primer #1600, drums	- $1.25 per gal. less 8%.
DUX Oxide or Gray Surfacer #1800 in drums	- 1.40 per gal. less 8%.
DUX Glazing Putty #1900, pails	- .17 per lb. less 8%.

It is understood High Solid Duco, in all colors excepting Black, shall contain approximately 33% more solids than Duco of normal solid content furnished in the past. The percentage of solids is as follows:

Color	Normal Solid	High Solid
Blues	28%	38.8%
Dark Grays	30.5%	41%
Light Grays	35.1%	43.1%
Reds	27%	37%
Greens	30.5%	41%
Dark Browns	30.5%	41%
Beige - Light Browns	30.5%	41%
Yellow	30.5%	41%

For General Motors Export Company's requirements, an additional charge of $.15 per gal. on all Pyroxylin finishes and Thinners will be made, however, these prices are subject to the usual differential for smaller packages and are also subject to change upon thirty days' notice.

Above prices include deliveries to factory branches upon orders received from Buyer's division owning or controlling branches to which deliveries are specified to be made.

Containers are to be returned to Seller F.O.B. Buyer's plants with the exceptions noted below.

On shipments by rail to Oakland, California, Seller will allow freight to St.Louis,Mo. On return of empty containers from this point Seller will allow freight from St.Louis to Seller's plant.

In case shipments are made via boat from Seller's plant to Oakland, California, and other points west of St. Louis (excepting Kansas City, Missouri), full freight will be allowed as well as return shipments via boat of empty containers.

On all shipments from Seller's plant to Kansas City, Missouri, full freight will be allowed as well as on return shipments of empty containers.

On shipments to General Motors Export Company: F.O.B. docks, New York City.

Prices on all material, as noted above, are effective as of December 1st, 1928, also, on any unfilled orders shipped on and after this date.

5. SPECIAL EQUIPMENT: Unless otherwise herein agreed, special dies, tools and patterns used in the manufacture of said articles shall be furnished by and at the expense of the Seller. Said dies, tools and patterns shall be kept in good condition and from time to time, when necessary, shall be replaced by Seller without expense to Buyer. However, the Buyer has the option at any time to reimburse the Seller for the whole or any part of said dies, tools or patterns and replacements and become the owner and entitled to the possession of same. All changes in said dies, tools and patterns, due to the Buyer's change of design or specifications shall be paid for by the Buyer.

6. SPECIFICATIONS: Said articles shall be according to specifications, drawings, samples, or other description furnished or adopted by the Buyer.

7. WARRANTIES: The Seller warrants articles supplied under this contract to conform to specifications herein, to be fit and sufficient for the purpose intended, merchantable, of good material and workmanship, and free from defect.

8. INSPECTION AND REJECTIONS: All articles shall be subject to the Buyer's inspection within a reasonable time after delivery, irrespective of date of payment thereof, but the Buyer shall promptly notify the Seller of any defects detected and hold any articles so claimed to be defective for the Seller's instructions and at his risk, for a reasonable period, not to exceed 60 days.

9. PATENT PROTECTION: The Seller warrants that the articles purchased hereunder do not and will not infringe any Letters Patent granted by the United States of America or by any country foreign thereto. The Seller covenants and agrees to save harmless and protect the Buyer, its successors, assigns, customers and users of its product, against any claim or demand based upon such infringement, and after notice, to appear and defend at its own expense any suits at law or in equity arising therefrom.

If said articles are protected by one or more patents, and a decree or judgment be entered in a court of competent jurisdiction holding any such patent or its claim invalid, or so limited in scope as to impair its protection commercially, this contract may forthwith be cancelled.

10. NON-PERFORMANCE EXCUSED: The Seller shall not be responsible for delays or defaults in deliveries, nor the Buyer for failure to receive, if occasioned by wars, strikes, fires, the act of God or the public enemy, labor or transportation difficulties or other causes beyond their control.

11. INSOLVENCY AND CANCELLATION: In the event of any proceedings by or against either party, voluntary or involuntary, in bankruptcy or insolvency, or for the appointment of a receiver or trustee or an assignee for the benefit of creditors, of the property of either party, or in the event of the breach of any of the terms hereof, including the warrants of the Seller, the other party shall be entitled to cancel this contract forthwith.

12. REMEDIES, ETC.: The remedies herein reserved shall be cumulative, and additional to any other or further remedies provided in law or equity. No waiver of a breach of any provision of this contract shall constitute a waiver of any other breach or of such provision. Except as expressed herein, there are no antecedents or other agreements respecting the subject matter hereof; any modifications or variations of this contract, to be binding, shall be in writing, executed in behalf of the parties by like authority as this contract.

13. THE SELLER shall not, without first obtaining the written consent of the Buyer, in any manner advertise or publish the fact that the Seller has contracted to furnish Buyer the articles herein mentioned, and for failure to observe this provision Buyer shall have the right to cancel this contract without any further liability thereon.

14. MICHIGAN CONTRACT AND NON-ASSIGNMENT; This contract is to be construed according to the laws of the State of Michigan and is non-assignable by the Seller.

15. IN WITNESS WHEREOF the parties hereto have caused these presents to be executed in duplicate the year and date first above written.

....GENERAL MOTORS CORPORATION..... ....E. I. du Pont de Nemours & Co., Inc.

....BY: ....

DIRECTOR - STAFF
GENERAL PURCHASING COMMITTEE

Director Automotive Sales

C.P. [illegible] PRINTED IN U.S.A.

Defendant's Exhibit (GM) No. 189

7220.

Agreement, dated the first day of January, 1930, between E. I. duPont de Nemours & Company, Wilmington, Delaware hereinafter called the "Seller," and General Motors Corporation, Detroit, Michigan a corporation of Delaware hereinafter referred to as the "Buyer," WITNESSETH;

The Seller agrees to sell and the Buyer agrees to purchase, at the price and upon and subject to the following terms and conditions, the following articles, hereinafter referred to as the "articles."

1. DESCRIPTION AND QUANTITIES: PRICE PER

General Motors' requirements of Seller's make of DUX materials as noted below, and Pyroxylin Finishes including Duco at the following prices:

244 Line Black Duco in 5 gal. cans	@ $2.45 per gal. less 10%
244 Line Maroon Duco in 5 gal. cans	@ 4.60 per gal. less 10%
244 & 235 Line White Duco in 5 gal. cans	@ 2.95 per gal. less 10%
244 Line Standard Duco Colors (excepting Black, Maroon, White) in 5 gal. cans	@ 2.60 per gal. less 10%
246 Line Standard Duco Colors (Heavy Solids) with the exception of Black, Maroon & White in 5 gal. cans	@ 2.80 per gal. less 10%
248 Line Color Coats in 5 gal. cans	@ 2.75 per gal. less 10%
248 & 235 Line Ground Coat (White) in 5 gal. cans	@ 3.25 per gal. less 10%
284 Line Wheel Duco, standard colors in 5 gal. cans	@ 2.60 per gal. less 10%
242 Line Non chalking, standard colors in 5gal. cans	@ 2.90 per gal. less 10%

Above subject to a further reduction of $.10 per gal. if shipped in bbls. Duco or Striping Colors in packages smaller than 5 gal. cans are subject to the usual differential now in force.

288 Line Standard Striping Colors -	1 gal. cans $6.15 -	qts. $1.75 -	each less 10%
288 Line Black Striping Colors -	1 gal. cans 5.15 -	qts. 1.50 -	each less 10%
288 Line Maroon Striping Colors -	1 gal. cans 8.15 -	qts. 2.25 -	each less 10%

#3601 Duco Thinner in drums	$1.04 per gal. net
#3634 Duco Thinner in drums	.88 per gal. net
#3614 Duco Thinner in drums	.85 per gal. net
#3637 Duco Thinner in drums	.71 per gal. net

(Over)

2. TERMS OF PAYMENT: 1% cash 25th Prox.

3. F. O. B. Cars - city in which Buyer's Division is located with exceptions as noted hereinafter

4. DELIVERIES: Delivery shall be made between the date hereof and February 28th, 1931 as may be specified from time to time on Buyer's regular purchase orders, on or before December 31st, 1930 without charge for boxing, crating, cartage or storage, suitably packed to secure lowest transportation cost and in accordance with the requirements of Common Carriers.

(Over)

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7221 Pyroxylin Surfacer in drums — [illegible] per gal. less 10%
#3942 Retarder in drums — 2.00 per gal. less 10%

DUX Oxide Primer #1600, Drums — 1.23 per gal. less 8%
DUX Oxide or Gray Surfacer #1800 in drums — 1.38 per gal. less 8%
DUX Glazing Putty #1900 gal. pails — .19 per lb. less 8%

Special Products for Frigidaire Corp.

287 Line Colored Duco in 5 gal. cans		C	$3.15 per gal. less 10%
Formula 2873443 Gray Duco in 5 gal. cans		C	2.90 per gal. less 10%
" 2447459 Red " " " " "		C	4.65 per gal. less 10%
" 2447151 Mahogany " " " " "		C	4.65 per gal. less 10%
" 2447151 " " " 48 gal. barrels		C	4.55 per gal. less 10%
" 28731 White " " " " "		C	2.85 per gal. less 10%
" 2354652 " " " 1 gal. cans		C	3.65 per gal. less 10%
" RM-33860 Black Rubber First Coater in 50 gal. Drums		C	.81½ per gal. less 8%
" V-10963 Black Finishing Enamel in 50 gal. Drums		C	.71½ per gal. less 8%
Formula 1110 Clear Lacquer in 50 gal. drums		C	2.50 per gal. net
" 1144 " " " " "		C	2.50 per gal. net
" 1211 Top Coat Lacquer in 50 gal. drums		C	3.00 per gal. net
" 22831 White PX Touch-Up Putty in tubes		C	.25 per tube net
Formula 3614 Thinner in 50 gal. drums		C	.85 per gal. net
" 3638 " " " " "		C	.69 per gal. net
" 3637 " " " " "		C	.71 per gal. net
" 3653 " " " " "		C	.65 per gal. net
" 3682 " " " " "		C	.74½ per gal. net
Formula F-7135 Gray Spraying Baking Primer in 50 gal. drums		C	2.25 per gal. net
" F-7145 Gray Dipping " " in 50 gal. drums		C	2.25 per gal. net
" F-7221 White Sanding Surfacer in 50 gal. drums		C	2.50 per gal. net
" FV-2082 Reducer in 50 gal. drums		C	.55 per gal. net
" FV-3068 Black Touch-Up Enamel in 5 gal. cans		C	1.75 per gal. net
" FV-2006 Rubbing Compound in ¼ lb. cans		C	.15 per can net
" FP-20088 Glazing Putty in 1 Gal. pails		C	.22 per lb. net
#7 Duco Polish in 1 pint cans		C	1.00 per can less 50-10%

Special Products for Fokker Aircraft Corp.

Aircraft Duco Finishes:			
White, Ivory and Cream in 5 gal. cans		C	3.50 per gal. less 10%
Colors " " " "		C	3.25 per gal. less 10%
Black " " " "		C	3.10 per gal. less 10%
6402 Gray Oil Primer in 5 gal. cans		C	2.00 per gal. less 8%
41050 Oil Surfacer " " " "		C	2.85 per gal. less 8%
6199 Dark Oxide Oil Primer in 5 gal. cans		C	2.00 per gal. less 8%
5360 DuPont Special Clear Slackproof Dope in 5 gal. cans		C	2.50 per gal. less 8%
403 Special Dope Thinner in 5 gal. cans		C	1.73 per gal. net
" " " " " 50 gal. drums		C	1.48 per gal. net
3601 Thinner " 5 gal. cans		C	1.29 per gal. net
" " " 50 gal. drums		C	1.04 per gal. net

5019

Contract dated January 1, 1930 between E. I. duPont de Nemours & Co., Wilmington, Delaware, and General Motors Corp., Detroit Michigan.

(Continuation of Page 2)

Tank car shipments of any Thinners take a reduction of $.02 per gal.
Thinner prices subject to change upon thirty day's notice.

It is understood High Solid Duco, in all colors excepting Black, shall contain approximately 33⅓ more solids than Duco of normal solid content.

For General Motors Export Company's requirements, an additional charge of $.15 per gal. on all Pyroxylin finishes and Thinners will be made, however, these prices are subject to the usual differential for smaller packages and are also subject to change upon thirty day's notice.

On shipments to General Motors Export Company: F.O.B. docks, New York City.

Above prices include deliveries to factory branches upon orders received from Buyer's division owning or controlling branches to which deliveries are specified to be made.

Containers are to be returned to Seller F.O.B. Buyer's plants with the exceptions noted below.

On shipments by rail to Oakland, California, Seller will allow freight to St. Louis, Mo. On return of empty containers from this point Seller will allow freight from St. Louis to Seller's plant.

In case shipments are made via boat from Seller's plant to Oakland, California, and other points west of St. Louis (excepting Kansas City, Missouri), full freight will be allowed as well as return shipments via boat of empty containers.

Defendants' Trial Ex. No. ———

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5. SPECIAL EQUIPMENT: Unless otherwise herein agreed, special dies, tools and patterns used in the manufacture of said articles shall be furnished by and at the expense of the Seller. Said dies, tools and patterns shall be kept in good condition and from time to time, when necessary, shall be replaced by Seller without expense to Buyer. However, the Buyer has the option at any time to reimburse the Seller for the whole or any part of said dies, tools or patterns and replacements and become the owner and entitled to the possession of same. All changes in said dies, tools and patterns, due to the Buyer's change of design or specifications shall be paid for by the Buyer.

6. SPECIFICATIONS: Said articles shall be according to specifications, drawings, samples, or other description furnished or adopted by the Buyer.

7. WARRANTIES: The Seller warrants articles supplied under this contract to conform to specifications herein, to be fit and sufficient for the purpose intended, merchantable, of good material and workmanship, and free from defect.

8. INSPECTION AND REJECTIONS: All articles shall be subject to the Buyer's inspection within a reasonable time after delivery, irrespective of date of payment thereof, but the Buyer shall promptly notify the Seller of any defects detected and hold any articles so claimed to be defective for the Seller's instructions and at his risk, for a reasonable period, not to exceed 60 days.

9. PATENT PROTECTION: The Seller warrants that the articles purchased hereunder do not and will not infringe any Letters Patent granted by the United States of America or by any country foreign thereto. The Seller convenants and agrees to save harmless and protect the Buyer, its successors, assigns, customers and users of its product, against any claim or demand based upon such infringement, and after notice, to appear and defend at its own expense any suits at law or in equity arising therefrom.

If said articles are protected by one or more patents, and a decree or judgment be entered in a court of competent jurisdiction holding any such patent or its claim invalid, or so limited in scope as to impair its protection commercially, this contract may forthwith be cancelled.

10. NON-PERFORMANCE EXCUSED: The Seller shall not be responsible for delays or defaults in deliveries, nor the Buyer for failure to receive, if occasioned by wars, strikes, fires, the act of God or the public enemy, labor or transportation difficulties or other causes beyond their control.

11. INSOLVENCY AND CANCELLATION: In the event of any proceedings by or against either party, voluntary or involuntary, in bankruptcy or insolvency, or for the appointment of a receiver or trustee or an assignee for the benefit of creditors, of the property of either party, or in the event of the breach of any of the terms hereof, including the warrants of the Seller, the other party shall be entitled to cancel this contract forthwith.

12. REMEDIES, ETC.: The remedies herein reserved shall be cumulative, and additional to any other or further remedies provided in law or equity. No waiver of a breach of any provision of this contract shall constitute a waiver of any other breach or of such provision. Except as expressed herein, there are no antecedents or other agreements respecting the subject matter hereof; any modifications or variations of this contract, to be binding, shall be in writing, executed in behalf of the parties by like authority as this contract.

13. THE SELLER shall not, without first obtaining the written consent of the Buyer, in any manner advertise or publish the fact that the Seller has contracted to furnish Buyer the articles herein mentioned, and for failure to observe this provision Buyer shall have the right to cancel this contract without any further liability thereon.

14. MICHIGAN CONTRACT AND NON-ASSIGNMENT: This contract is to be construed according to the laws of the State of Michigan and is non-assignable by the Seller.

15. IN WITNESS WHEREOF the parties hereto have caused these presents to be executed in duplicate the year and date first above written.

GENERAL MOTORS CORPORATION

BY James Lynch

Director - Staff
GENERAL PURCHASING COMMITTEE

E. I. du Pont de Nemours

per Gastenpaco

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C. P. 18 SM-4-29-32626-BMP
Printed in U. S. A.

Defendant's Exhibit (GM) No. 190

7224

Agreement, dated the First day of January, 192 31, between E. I. duPont de Nemours & Company, Wilmington, Delaware hereinafter called the "Seller," and General Motors Corporation Detroit, Michigan a corporation of Delaware hereinafter referred to as the "Buyer," WITNESSETH;

The Seller agrees to sell and the Buyer agrees to purchase, at the price and upon and subject to the following terms and conditions, the following articles, hereinafter referred to as the "articles."

1. DESCRIPTION AND QUANTITIES:

Buyer's requirements of Seller's make of DUX materials, Pyroxylin Finishes including Duco as noted below at the following prices:

	PRICE PER
#244 Line Black Duco in 5 gal. cans (excepting #244-5113)	$2.35 per gal. less 10%
#244-5113 Black Duco in 5 gal. cans	2.45 per gal. less 10%
#244 Line Maroon Duco in 5 gal. cans	4.50 per gal. less 10%
#244 Line White Duco in 5 gal. cans	2.75 per gal. less 10%
#235 Line White Duco in 5 gal. cans	2.85 per gal. less 10%
#244 Line Standard Duco Colors (excepting Black, Maroon, White) in 5 gal. cans	2.50 per gal. less 10%
#246 Line Standard Duco Colors (Heavy Solids) with the exception of Black, Maroon and White in 5 gal. cans	2.70 per gal. less 10%
#246 Line Color Coats in 5 gal. cans	2.65 per gal. less 10%
#248 Line Ground Coat White in 5 gal. cans	3.00 per gal. less 10%
#[illegible]5 Line Ground Coat White in 5 gal. cans	3.00 per gal. less 10%
#[illegible]4 Line Wheel Duco, standard colors in 5 gal. cans	2.50 per gal. less 10%

Above subject to a further reduction of $.10 per gallon if shipped in Bbls.

DUCO OR STRIPING COLORS

#288 Line Standard Striping Colors 1 gal. cans	$5.20 per gal. less 10%
286 Line Black Striping Colors - 1 gal. cans	3.76 per gal. less 10%
288 Line Maroon Striping Colors - 1 gal. cans	7.43 per gal. less 10%

Duco or Striping Colors in packages smaller than 5 gal. cans are subject to the usual differential now in force.

DUCO THINNERS

#3601 Duco Thinner in drums	$ .96 per gal. net
3634 Duco Thinner in drums	.80 per gal. net
3614 Duco Thinner in drums	.76 per gal. net
3637 Duco Thinner in drums	.59 per gal. net

2. TERMS OF PAYMENT: 1% - 25th prox. (OVER)

3. F. O. B. Cars - city in which Buyer's Division is located with the exceptions as noted hereinafter.

4. DELIVERIES: Delivery shall be made between the date hereof and February 29th, 1932 as may be specified from time to time on Buyer's regular purchase orders, on or before December 31st, 1931 without charge for boxing, crating, cartage or storage, suitably packed to secure lowest transportation cost and in accordance with the requirements of Common Carriers.

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DUCO THINNERS - Cont'd.

#3639 Duco Thinner in drums	@ $ .61 per gal. net
3640 Duco Thinner in drums	@ .78 per gal. net
3656 Duco Thinner in drums	@ .71 per gal. net
3691 Duco Thinner in drums	@ .74 per gal. net
3691 C Duco Thinner in drums	@ .73 per gal. net
3753 Duco Thinner in drums	@ .63 per gal. net
3758 Duco Thinner in drums	@ .57 per gal. net
3760 Duco Thinner in drums	@ .52 per gal. net
Pyroxylin Primers in drums	@ 2.15 per gal. less 10%
Pyroxylin Surfacer in drums	@ 2.25 per gal. less 10%
#3942 Retarder in drums	@ 2.00 per gal. less 10%
DUX Oxide #1600 in drums	@ 1.10 per gal. less 8%
DUX Oxide or Gray Surfacer #1800 in drums	@ 1.20 per gal. less 8%
DUX Glazing Putty #1900 - 1 gal. pails	@ .19 per lb. less 8%

SPECIAL PRODUCTS FOR FRIGIDAIRE CORPORATION

287 Line Colored Duco in 5 gal. cans	@ $3.15 per gal. less 10%
Formula 2873443 Gray Duco in 5 gal. cans	@ 2.90 per gal. less 10%
" 2447459 Red " " " " "	@ 4.65 per gal. less 10%
" 2447151 Mahogany Duco in 5 gal. cans	@ 4.65 per gal. less 10%
" 2447151 " " " 48 " bbls.	@ 4.55 per gal. less 10%
" 28731 White " " " " "	@ 2.78 per gal. less 10%
" 2354652 " " " 1 gal. cans	@ 3.15 per gal. less 10%
" RH-33860 Black Rubber First Coater in 50 gal. drums	@ .815 per gal. less 8%
" V-10963 Black Finishing Enamel in 50 gal. drums	@ .57 net
Formula 1110 Clear Lacquer in 50 gal. drums	@ 2.50 per gal. net
" 1144 " " " " " "	@ 2.50 per gal. net
" 1211 Top Coat Lacquer in 50 gal. drums	@ 3.00 per gal. net
" 22831 White PX Touch-Up Putty in tubes	@ .25 per tube net
Formula 3614 Thinner in 50 gal. drums	@ .76 per gal. net
" 3638 " " " " "	@ .69 per gal. net
" 3637 " " " " "	@ .59 per gal. net
" 3653 " " " " "	@ .64 per gal. net
" 3682 " " " " "	@ .705 per gal. net
" F-7135 Gray Spraying Baking Primer in 50 gal. drs.	@ 2.25 less 8% per gal.
" F-7145 Gray Dipping Baking Primer in 50 gal. drs.	@ 2.25 less 8% per gal.
" F-7221 White Sanding Surfacer in 50 gal. drums	@ 2.50 less 8% per gal.
" FV-2082 Reducer in 50 gal. drums	@ .55 less 8% per gal.
" FV-3068 Black Touch-up Enamel in 5 gal. cans	@ 1.75 less 8% per gal.
" FV-2006 Rubbing Compound in 1/4 lb. cans	@ .15 per can net
" FP-20088 Glazing Putty in 1 gal. pails	@ .22 per lb. net
#7 Duco Polish in 1 pint cans	@ 1.00 per can less 50-10%
Formula F-7552 Gray Spraying Baking Primer	@ 2.15 less 8% in drums

SPECIAL PRODUCTS FOR FOKKER AIRCRAFT CORPORATION

Aircraft Duco Finishes:	
White, Ivory and Cream in 5 gal. cans	@ $3.50 per gal. less 10%
Colors " " " "	@ 3.25 per gal. less 10%
Black " " " "	@ 3.10 per gal. less 10%
6402 Gray Oil Primer in 5 gal. cans	@ 2.00 per gal. less 8%
41050 Oil Surfacer " " "	@ 2.85 per gal. less 8%
6199 Dark Oxide Oil Primer in 5 gal. cans	@ 2.00 per gal. less 8%
3601 Thinner in 5 gal. cans	@ 1.21 per gal. net
" " " 50 gal. drums	@ .96 per gal. net

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Defendant's Exhibit (GM) No. 194

7232

May 18, 1928.

O. H. Briggs, Sales Manager,
Du Pont - Pathe Film Mfg. Corp.
35 West 45th St.,
New York, N. Y.

Dear Mr. Briggs:

With reference to your letter of May 16th, informing us that the Rothacker Film Company of Chicago is making pictures from time to time for General Motors, and raising the question whether in some way or other you can get us to specify the use of Du Pont films. I advise that such pictures as the Rothacker Company may be making are for our individual units and if you ascertain the names of these units you might properly take the matter up with them.

It is my belief that the present time Chevrolet, and possibly Olds, are the only units having motion pictures made, and I believe that the concern making the pictures handles its purchase of films independently.

In the making of our purchases, we believe that each transaction should stand on its merits and we presume that the company buying films for our use is guided by this same principle and that if the quality of your product and service, consistent with prices quoted, are the best he can obtain, he will buy from you.

Very truly yours,

GENERAL PURCHASING COMMITTEE
/s/ JAMES LYNAH
Director-Staff.

James Lynah:CGC
CC: Mr. J. L. Pratt

NOTE. At top right is stamp "J. L. Pratt Answered—Noted" with illegible initials therein.

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Defendant's Exhibit (GM) No. 195

7233

E. I. DU PONT DE NEMOURS & COMPANY
WILMINGTON, DELAWARE

VICE PRESIDENT

February 18, 1919.

MR. P. S. DU PONT:

Since we have been carrying on some work for the General Motors Company, there has been a tendency on their part to ask for the transfer from this company to the General Motors, of some of the men which we have sent to confer with them, or make investigations for them.

Two more or less prominent cases occur to me at the moment. One, Mr. J. L. Pratt, and the other Dr. Squires.

Mr. Pratt made an investigation for them of the general housing question, and I understand Mr. Durant was so pleased with his work that he made the suggestion that he would like to see Mr. Pratt transferred to his company.

It occurs to me that they are missing the more important point; namely, that it is not the individual, necessarily, who is able to go to the General Motors Company and make an investigation and carry through a piece of work satisfactory to them. What makes it possible for him to make this fine impression on the General Motors Company is the organization in which he works. For example, aside from being a good man himself, Mr. Pratt had access to all of the information in the Engineering Department, and knew exactly where to get this information quickly, and could also consult with such men as Pierce, Foster, etc.

A very analogous case might be that of a man who heard an extremely good orchestra and immediately sent for the leader of this orchestra to come to his house and play for him individually, believing that he was going to get the same music.

I am not bringing this up because I think that any action is necessary or advisable, but that you might have an opportunity some time to impress this upon Mr. Durant.

R R M Carpenter
VICE PRESIDENT.

RRMC/R.

NOTE: "No. RECEIVED FEB 19 1919 P.S. DU PONT." is stamped in upper right corner; check mark appears in upper left. Italics indicate handwriting.

THE NEW YORK TIMES. SUNDAY, MARCH 21, 1920.

Page 10 Section E

FINANCIAL MARKETS

Motor Stocks in Spectacular Rise, General Motors Leading—Reserve Ratio Up.

Speculative operations were centred chiefly in the automobile stocks yesterday, violent advances being recorded by several. The spectacle of General Motors rising more than 45 points on a Saturday morning was so unusual as to stir up comment about a severely manhandled short interest. There was considerable activity of specialties, but most of the seasoned shares, steel, oil, tobacco, rail and other groups were inclined to a quiet tone, with profit taking sales making fractional inroads into the gains recorded on Friday. The copper department displayed a fair degree of strength in the second hour of business, being stimulated by reports that comprehensive plans were being worked out for financing sales of the metal to French and possibly other foreign buyers. Concerted banking assistance would be more than welcome to copper producers who have seen their stocks of metal accumulate since the armistice was signed without an adequate outlet abroad.

TOPICS IN WALL STREET.

General Motors Buoyant.

The forward movement in General Motors attracted a high degree of interest. The advance of 37½ points was reminiscent of the shares when they were riding on the crest of the bull market of last year. As a matter of fact, General Motors at the high yesterday was only a little removed from the record price, made in 1919. Apparently the shorts in this issue have had a bad beating. Considering that yesterday's trading session was of only two hours' duration, the advance in the shares was probably as great as any ever recorded. Some degree of the rapidity of the movement may be gained from the fact that at 11:40 A. M. General Motors was selling at 372, climbed from there to 380 and reacted to 380. Stutz Motors was a strong second to General Motors, recording an advance of 16 points on a comparatively small turnover.

'CHANGE FIAT HALTS SHORTS' DISASTER

Quick Ruling Allowing Delivery of Temporary Certificates Averts Disaster.

MOTORS GOES TO $409

Drops to Normal as Danger of Bulge Like Northern Pacific in 1901 Passes.

A corner in General Motors stock that had all of the earmarks of developing just as sensationally as the famous Northern Pacific corner of 1901, was broken at the outset early yesterday by the quick action of the Committee on Securities of the New York Stock Exchange. For the first ten minutes traders on the short side faced tremendous losses, as it was realized that General Motors stock was not to be had, except by the most spirited bidding, and this was small consolation to those who were obliged to cover heavy commitments. Just how large was the short interest probably never will be accurately known, but it is believed to have extended into thousands of shares and the prospect of having to cover the scale of rising prices that was evident was appalling. A few days ago one house was reported to be short 30,000 shares of stock, and in brokerage houses throughout the country the shorts were eager followers of the tape at the opening yesterday.

The situation in General Motors was apparent Saturday when there was an advance of 37½ points to 380. It was short covering that ran the issue up in this wise and traders were in fear of what the opening would bring forth. The demand for the stock was such that on 1,500 shares there was a split opening at $395-$400 or an advance of $15 to $20 over the week-end. The next 500 shares a few seconds later went at $404 and from then there was a steady climb to 408 on 3,900 shares. The price eased for a moment and then shot forward again to $409. There was consternation on the faces of traders. The General Motors post was surrounded with the most excited group of persons in all of the financial district of the city. They crowded over each other in their eagerness to place orders, and there were the raucous calls peculiar to the Exchange in its most excited minutes.

Committee Acts Quickly.

Upstairs, however, the solution of the situation was being mapped out. The Committee on Securities, realizing that a tense situation existed with regard to General Motors, went into session just before the gong announced the beginning of trading on the floor of the Exchange, and within ten minutes an announcement came forth that entirely changed the complexion of things. The committee had made a quick ruling that General Motors, new stock, was a good delivery against General Motors, old stock, on a basis of ten shares of the new for one of the old. This opened up a supply of stock such as relieved the tension, and the price of the old and scarce shares dropped with almost the same abruptness that it had risen. Before twenty-five minutes had passed they had slipped back to 392, and the threatened corner was broken.

The ruling of the Committee on Securities was announced in the following form:

"The Committee on Securities rules that on and after March 22, 1920, ten shares of General Motors temporary certificates (no par value) shall be delivery for one share of General Motors common stock, $100 par value."

This announcement slipped quietly out on the ticker some ten minutes after the opening and when the market was at its height. It carried the word of relief to the harried traders on the floor and in the commission houses throughout the country, for it provided the opening up of the entire General Motors issue of new and old common stock wherewith to provide the means for covering.

Conversion Reduces Old Stock.

Conditions making for a corner in General Motors came about through the subdivision of the old shares, the ones which yesterday sold at $409. These were divided into new stock of no par value on the basis of ten new shares for each old share. The conversion has been taking place for some time and with each of the old shares so converted the floating supply of old shares was reduced on the Exchange. Even before conversion of any of the old shares into new the floating supply of old stock was not more than 50 per cent. of the outstanding issue, since 30 per cent. was held by the du Pont interests and about 20 per cent. was held by other interests closely identified with the company. The conversion, therefore, brought the supply of old stock outstanding down to a relatively small amount.

As this conversion progressed there was a smaller and smaller opportunity for the shorts to cover. The General Motors issue has been a favorite medium for short selling by big traders and they found themselves trapped some days ago. It was their endeavor to cover that advanced the old stock from 225½, its low for this year, to above 300. From then on the pace became rapid. Its speed is shown by the fact that the opening price on Saturday was 345.

Up to yesterday the new, or subdivided old shares, could not be delivered against sales of the old stock. There had never been any ruling that the new shares were not good delivery, but the very fact that there had been no ruling made it impossible to trade in this way. The ruling that the new shares on a basis of ten new for one of old were good delivery against a short sale of the old stock prevented a real catastrophe for the General Motors shorts.

Defendant's Exhibit (GM) No. 196 7237

GENERAL MOTORS CORPORATION
Meeting between President and Plant Managers
New York, New York

December 1, 1920

PRESENT: P. S. du Pont, in the Chair
J. A. Haskell
A. P. Sloan
De Witt Page
H. H. Bassett
F. W. Hohensee
R. H. Collins
W. L. Day
F. W. Warner
T. W. Warner

Also H. L. Barton
J. L. Pratt,
E. F. Johnson
M. L. Prensky
F. Turner
J. J. Raskob
G. H. Hannum
J. A. Craig
A. L. Cash
K. W. Zimmerschied
A. B. C. Hardy
J. T. Smith
H. H. Rice

INVENTORIES COMMITTEE

It was suggested and finally unanimously agreed that the present Inventories Committee consisting of three should be enlarged to include the Treasurer and the Comptroller, and that these five shall be considered an Executive Committee of

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a still larger "Inventories Committee;" the other members being a representative from every plant, said representatives to be selected by the Managers; this committee being appointed for the purpose of re-valuing our inventories.

It was agreed that Mr. Prensky should be Vice Chairman of this Committee and as such shall be in charge of the re-valuation of our physical inventories.

The President pointed out that the object sought by this action is only to make sure that our inventories are written down to their true values.

It was understood that the Managers would appoint their representatives at once and advise the Chairman of the Inventories Committee (Mr. John L. Pratt) the names of the persons selected.

FUTURE SALES

Mr. du Pont inquired about what was being done in the way of estimating future sales, and was advised that the Managers have supplied the Inventories Committee with an estimate of possible sales for the first four months of next year. It was requested that the various Divisions revise these estimates each

month and send such revised estimates to Mr. Pratt, Chairman of the Inventories Committee, who will submit a report to the Executive Committee monthly, in order that the Executive Committee may have before it each month a revised estimate of sales for the succeeding four months.

FUTURE COMMITMENTS FOR MATERIALS

It was the sense of the meeting that all the Divisions should be very careful about making future commitments for materials, only doing so where it is absolutely necessary. It was understood that for the present our policy shall be to make contracts for our requirements only so far as possible, and that future commitments shall be kept at a minimum.

INVENTORIES SCHEDULE

The President inquired whether the Inventory allotments now existing are considered satisfactory to the Divisions. It was unanimously agreed that the Inventories Committee should study this matter and submit to the Executive Committee its recommendations as to a revision of the allotments for inventories for the several Divisions.

The question was raised as to whether the Inventories Committee has power to authorize the purchase of material for

Defendant's Exhibit (GM) No. 193

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COPY

DU PONT - PATHE
FILM MFG. CORPORATION
35 West 45th Street,
New York, N. Y.

May 16, 1928.

General Motors Corporation
General Motors Building,
Detroit, Michigan.

Attention: Mr. J. Lynah,
Director of Purchases.

Dear Mr. Lynah:

I understand that the Rothacker Film Company of Chicago is making pictures from time to time for General Motors. We are wondering if there is not some way that we can get you to specify the use of DuPont film. Both our negative and positive film is being used in large quantities by practically all of the large producing companies, the product to you as being equal to the best on the market.

We have taken this matter up with the General Motors Office here in New York and they have advised us that your office handles all matters of this kind. We will be glad to give you any further information that may be desired in case you can see your way to cooperate with us.

We will appreciate any assistance you may give us in this matter.

Yours very truly,

O. H. Briggs,
Sales Manager.

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PERFORMANCE OF QUANTITY DISCOUNT CONTRACTS

AS OF OCTOBER 31, 1927

BRIEF NO. 1	NAME OF SELLER 2	DATE OF CONT. 3	PURCHASES IN DOLLARS			DISCOUNT IN %			SAVINGS IN DOLLARS		
			TO DATE 4	ANNUAL AT PRESENT RATE 5	ANNUAL TO OBTAIN MAX. DISC'T 6	TO DATE 7	ANNUAL AT PRESENT RATE 8	ANNUAL POSSIBLE MAX. 9	TO DATE 10	ANNUAL AT PRESENT RATE 11	AT VOLUME COLUMN 6 12
281	Cleveland Graphite Bronze Co.	1-1-27	1,208,028.	1,449,634.	1,500,000	0	1	1	0	3,496.	6,000.
415	Wagner Elec.Corp.(Transformers)	1-1-27	8,953.	10,744.	10,000	4	5	5	358.	537.	500.
416	Wagner Elec.Corp.(Motors)	1-1-27	4,349.	5,219.	50,000	0	2	6	0	104.	3,000.
470	Pratt & Whitney Co.	5-1-27	14,813.	29,626.	60,000	12	12	17	1,778.	3,555.	10,200.
488	Trico Products Co.(Mirrors)	7-1-27	50,477.	151,431.	250,000	2	6	10	1,010.	9,086.	25,000.
483	McQuay-Norris Mfg. Co.	7-1-27	38,513.	115,539.	350,000	0	1	6	0	280.	9,750.
435	E.I.duPont deNemours & Co.	1-1-27	976,014.	1,171,217.	800,000	8	8	8	78,081.	93,697.	64,000.

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Defendant's Exhibit (GM) No. 192

PERFORMANCE OF QUANTITY DISCOUNT CONTRACTS

AS OF OCTOBER 31, 1927

BRIEF NO.	NAME OF SELLER	DATE OF CONT.	PURCHASES IN DOLLARS			DISCOUNT IN %			SAVINGS IN DOLLARS		
			TO DATE	ANNUAL AT PRESENT RATE	ANNUAL TO OBTAIN MAX. DISC'T	TO DATE	ANNUAL AT PRESENT RATE	ANNUAL POSSIBLE MAX.	TO DATE	ANNUAL AT PRESENT RATE	AT VOLUME COLUMN 6
1	2	3	4	5	6	7	8	9	10	11	12
449	Lake Erie Bolt & Nut Co.	1-1-27	201,269.	241,523.	500,000.	0	0	5	0	0	25,000.
446	Russell, Burdsall & Ward	1-1-27	893,445.	1,072,134.	1,500,000.	2	4	7½	17,869.	42,885.	112,000.
448	Buffalo Bolt Company	1-1-27	177,131.	212,558.	450,000.	2½	3	7½	4,428.	6,377.	33,750.
447	Lamson & Sessions Company	1-1-27	779,220.	935,064.	1,500,000.	1½	3	7½	11,688.	28,052.	112,000.
469	John-Sons Cage Works	7-1-27	1,520.	4,560.	20,000.	15	15	25	228.	684.	5,000.
499	Hamilton Press & Mach. Co.	9-1-27	49,775.	298,650.	600,000.	0	4	7½	0	11,946.	45,000.
461	Mercury Manufacturing Co.	3-15-27	12,271.	19,634.	100,000.	5	6	8	614.	1,178.	8,000.
466	Michigan Tool Company	1-1-27	254,329.	305,075.	300,000.	2	3	3	5,085.	9,152.	9,000.
458	Ready-Power Company	3-15-27	12,978.	20,765.	70,000.	4	5	10	519.	831.	8,000.
456	Ex-Cell-O Tool & Mfg. Co.	3-1-27	28,770.	43,155.	100,000.	2	4	10	575.	1,726.	10,000.
468	Aluminum Company of America	5-1-27	6,133,633#	12,267,266#	- - -	0	1/2¢	1¢	0	11,336.	- - -
455	Alstool Manufacturing Co.	3-15-27	15,236.	21,510.	100,000.	1	2	11	152.	430.	11,000.
422	Illinois Tool Works	1-1-27	113,891.	136,668.	250,000.	4	4	10	4,556.	5,467.	25,000.
450	Eastern Machine Screw Corp.	1-1-27	86,053.	103,264.	300,000.	1	2	4	860.	2,065.	12,000.
463	Elwell Parker Elec. Co.	3-15-27	58,880.	96,208.	80,000.	5	8	8	2,944.	7,697.	6,400.
515	Wire Wheel Corporation	9-1-27	501,641.	2,508,205.	2,750,000	3	3	3½	13,798.	75,246.	96,250.
473	John Reith & Company	5-1-27	68,965.	137,930.	250,000	0	2½	15	0	3,448.	37,500.
425	Crocker-Wheeler Mfg. Co.	1-1-27	94,730.	113,676.	100,000	4	5	5	3,789.	5,684.	5,000.

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COPY

GENERAL MOTORS CORPORATION
Detroit, Michigan.

June 27, 1928.

PERSONAL AND CONFIDENTIAL

Mr. William Richter,
E. I. du Pont de Nemours & Co.,
Wilmington, Del.

Dear Bill:

Your personal letter of June 21st, informing me of the amount of the super-discount is good news.

I have been much interested in the functioning of this arrangement as I have felt that the super-discount is a distinct saving to us, and I am very much in hopes that the volume of participation will increase during the next year.

X George Staples has made a most pleasing impression out here and the co-ordination of the activities of your several divisions here is bound to result in better service and satisfaction to our various units.

With kind regards, I am

Very sincerely yours,

James Lynah:CGC (S) James Lynah

NOTE: "JLP I told him it looked like $197,000 for year ending 6/30/28. X is especially pleasing WR" is written in upper left corner. "G.M.C.—Products-Supplies & Materials—du Pont de Nemours, E. I." is written across top, followed by illegible initial; "J. L. PRATT ANSWERED NOTED" is stamped at top of page with a check mark after J. L. PRATT; "W. R." is stamped at top of page with illegible writing between the initials. "X" and line in left margin are by hand.

7227

5. SPECIAL EQUIPMENT: Unless otherwise herein agreed, special dies, tools and patterns used in the manufacture of said articles shall be furnished by and at the expense of the Seller. Said dies, tools and patterns shall be kept in good condition and from time to time, when necessary, shall be replaced by Seller without expense to Buyer. However, the Buyer has the option at any time to reimburse the Seller for the whole or any part of said dies, tools or patterns and replacements and become the owner and entitled to the possession of same. All changes in said dies, tools and patterns, due to the Buyer's change of design or specifications shall be paid for by the Buyer.

6. SPECIFICATIONS: Said articles shall be according to specifications, drawings, samples, or other description furnished or adopted by the Buyer.

7. WARRANTIES: The Seller warrants articles supplied under this contract to conform to specifications herein, to be fit and sufficient for the purpose intended, merchantable, of good material and workmanship, and free from defect.

8. INSPECTION AND REJECTIONS: All articles shall be subject to the Buyer's inspection within a reasonable time after delivery, irrespective of date of payment thereof, but the Buyer shall promptly notify the Seller of any defects detected and hold any articles so claimed to be defective for the Seller's instructions and at his risk, for a reasonable period, not to exceed 60 days.

9. PATENT PROTECTION: The Seller warrants that the articles purchased hereunder do not and will not infringe any Letters Patent granted by the United States of America or by any country foreign thereto. The Seller convenants and agrees to save harmless and protect the Buyer, its successors, assigns, customers and users of its product, against any claim or demand based upon such infringement, and after notice, to appear and defend at its own expense any suits at law or in equity arising therefrom.

If said articles are protected by one or more patents, and a decree or judgment be entered in a court of competent jurisdiction holding any such patent or its claim invalid, or so limited in scope as to impair its protection commercially, this contract may forthwith be cancelled.

10. NON-PERFORMANCE EXCUSED: The Seller shall not be responsible for delays or defaults in deliveries, nor the Buyer for failure to receive, if occasioned by wars, strikes, fires, the act of God or the public enemy, labor or transportation difficulties or other causes beyond their control.

11. INSOLVENCY AND CANCELLATION: In the event of any proceedings by or against either party, voluntary or involuntary, in bankruptcy or insolvency, or for the appointment of a receiver or trustee or an assignee for the benefit of creditors, of the property of either party, or in the event of the breach of any of the terms hereof, including the warrants of the Seller, the other party shall be entitled to cancel this contract forthwith.

12. REMEDIES, ETC.: The remedies herein reserved shall be cumulative, and additional to any other or further remedies provided in law or equity. No waiver of a breach of any provision of this contract shall constitute a waiver of any other breach or of such provision. Except as expressed herein, there are no antecedents or other agreements respecting the subject matter hereof; any modifications or variations of this contract, to be binding, shall be in writing, executed in behalf of the parties by like authority as this contract.

13. THE SELLER shall not, without first obtaining the written consent of the Buyer, in any manner advertise or publish the fact that the Seller has contracted to furnish Buyer the articles herein mentioned, and for failure to obeerve this provision Buyer shall have the right to cancel this contract without any further liability thereon.

14. MICHIGAN CONTRACT AND NON-ASSIGNMENT: This contract is to be construed according to the laws of the State of Michigan and is non-assignable by the Seller.

15. IN WITNESS WHEREOF the parties hereto have caused these presents to be executed in duplicate the year and date first above written.

GENERAL MOTORS CORPORATION

BY: [signature]

DIRECTOR - STAFF
GENERAL PURCHASING COMMITTEE

E. I duPONT de NEMOURS & COMPANY

BY: [signature]

4

5025

Contract dated January 1, 1931 between E. I. duPont de Nemours & Company, Wilmington, Delaware, and General Motors Corporation, Detroit, Michigan.

(Continuation of Page 2)

Tank car shipments of any Thinners take a reduction of $.03 per gal.
Thinner prices subject to change upon thirty days' notice.

It is understood High Solid Duco, in all colors excepting Black, shall contain approximately 33⅓ more solids than Duco of normal solid content.

For General Motors Export Company's requirements, an additional charge of $.15 per gal. on all Pyroxylin finishes and Thinners will be made, however, these prices are subject to the usual differential for smaller packages and are also subject to change upon thirty days' notice.

On shipments to General Motors Export Company: F.O.B. docks, New York City.

Above prices include deliveries to factory branches upon orders received from Buyer's Division owning or controlling branches to which deliveries are specified to be made.

Containers are to be returned to Seller F.O.B. Buyer's Plants with the exceptions noted below.

On shipments by rail to Oakland, California, Seller will allow freight to St. Louis, Mo. On return of empty containers from this point Seller will allow freight from St. Louis to Seller's plant.

In case shipments are made via boat from Seller's plant at Oakland, California, and other points west of St. Louis (excepting Kansas City, Missouri), full freight will be allowed as well as return shipments via boat of empty containers.

any project not approved by the Executive Committee and Finance Committee. It was agreed that the Inventories Committee may assume that any project listed on the schedule of inventories has been properly authorized, and in case a question arises of purchasing materials for a project not on this list, the same should be submitted to the Executive and Finance Committees before authorization is given.

QUESTION OF HAVING NEW PRODUCTS CHECKED BY MR. KETTERING

The question was raised as to whether the Sheridan car has been passed upon by Mr. Kettering's Department and been adopted as a regular part of our line. In the discussion there was brought out the question of having any new product or major change in our lines approved by our Research Organization under Mr. Kettering.

Finally it was unanimously adopted as the sense of the Meeting that adequate steps should be taken to safeguard the Company's interest in the matter of checking its present products and future new products, to which end it is requested that the President appoint a committee to report to the Executive Committee at an early date as to a method of putting an effectual check on the Company's products, and that for the present the President be requested to issue such

instructions as in his judgment may be deemed best as to the products of the Company which should be inspected and reported upon by Mr. Kettering's organization.

PRODUCTION OF SHERIDAN CARS

The Committee was advised that the program at present calls for the production of 250 Sheridan cars during the balance of this year. It was the unanimous opinion of the meeting that this program should be carried out, and that a committee be appointed consisting of Messrs. P. S. du Pont, J. A. Haskell and A. P. Sloan, Jr., to investigate the question of the Sheridan Car with a view to deciding whether this car is a proper one to put in the line for future production, and that a report should be submitted to the Executive Committee showing the investment required both in plant and working capital.

AGREEMENTS WITH DISTRIBUTORS, ETC.

Each Manager was requested to make a report to the Executive Committee of the number of Distributors, and Branches, and the dates of the expiration of the Distributors' contracts.

PRICE GUARANTEES

Each of the Divisions was requested to submit to the Executive Committee a report advising to what extent it has

guaranteed prices for future delivery, giving the dates covered thereby, and names of Distributors to whom guarantees have been made.

GENERAL INFORMATION REGARDING AUTOMOBILE BUSINESS AND THAT OF COMPETITORS

It was the unanimous opinion of the meeting that the Statistical Division should be requested to study the question of collecting and correlating information regarding Competitors' business and the general condition of the Automobile industry, with a view to mapping out a system of reports that will keep the Managers fully informed on the subject.

MEMBERSHIP IN THE NATIONAL AUTOMOBILE CHAMBER OF COMMERCE

It was unanimously requested that Messrs. Rice and Sills, who represent this Company upon the National Automobile Chamber of Commerce, be asked to submit a report to the Executive Committee, informing the Committee as to our obligations, both moral and legal, in connection with our membership in the National Automobile Chamber of Commerce -- what the expense of this membership is and the benefits derived therefrom; and also what obligations are attached to our membership.

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FRIGIDAIRE DIVISION

It was unanimously requested that a report be submitted to the next meeting of the Executive Committee on the status of the Frigidaire Division showing the amount expended to date on this development, the profits or losses sustained, and the expectation for the future.

SAMSON TRACTOR

Mr. Craig informed the meeting as to developments at Janesville and was very enthusiastic as to the future possibilities of the Tractor Division.

* * *

Defendant's Exhibit (GM) No. 199

7244

EXCERPT FROM MINUTES OF

GENERAL PURCHASING COMMITTEE

September 30, 1926

(e) Consideration of Policy Covering Distribution of Lists of Divisions' Suppliers for Sales Promotion Purposes.

Recently such a list was secured from a number of the divisions by General Motors Truck division of the Yellow Truck & Coach Manufacturing Company for the purpose of dealing with the matter of reciprocity. Mr. Pratt requested that a list of suppliers, showing annual amounts of purchases be compiled, for his information, but that such information is not to be distributed until a General Motors Policy is approved by the Executive Committee.

August 16, 1927

(f) Reciprocity.

Mr. Pratt having submitted to the Committee a copy of Mr. E. N. Johnson's report on a survey made in an endeavor to determine to what extent our purchases had influenced our suppliers to buy General Motors products, and while the survey indicated that in the past our suppliers have not used our products in any greater ratio to their total motor equipment than the average public, it was agreed that the whole subject of reciprocity was so fraught with complications that it should be our established policy that all purchase transactions be consummated on their merits; that is, on prices consistent with quality of product and service demanded, facilities and reliability and responsibility of suppliers..

5042

Defendant's Exhibit (GM) No. 200 7245

January 20, 1928.

A. P. Sloan, Jr.

Mr. J. L. Pratt

Attached is original letter from Lammot duPont with copy of my reply.

On general principles, I am not very keen—as I do not believe you will be—in developing things of this kind but this is the first time it has happened and it really is not very important for the reason that I do not believe we are buying to any great extent from any of these people unless it is the Inland Company.

APSJr./K

att.

E

Defendant's Exhibit (GM) No. 201

7246

Letterhead of
GENERAL MOTORS CORPORATION
Inter-Organization Letters Only

To Mr. A. P. Sloan, Jr., President — Address

From J. L. Pratt — Address

January 21, 1928.

Subject

I am in receipt of your memorandum of January 20th, enclosing letter from and copy of your reply to Mr. Lammot duPont in regard to our supplying him with the amount of our purchases from the Jones & Laughlin Steel Company and the Inland Steel Company.

I think we buy very little from the Inland Steel Company direct. We do buy considerable cold drawn steel from the LaSalle Steel Company, who in turn buy their base product from Inland.

We buy a great deal from Jones & Laughlin Steel Company. In fact we have had under consideration a general requirement contract for them to supply a considerable portion of our cold drawn and cold rolled steel.

This instance may be the first that Mr. Lammot duPont has requested information of this kind from you, but we have had a great many similar requests from the duPont organization in the last three or four years. The position I have taken as Chairman of the Purchasing Committee has been invariably to refuse to give the duPont Company any information which they might use in any way to influence their customers to think that the duPont Company in

any way could influence General Motors Corporation in buying their materials and supplies because the particular customer bought from the duPont Company. Personally, I think it is very necessary that we have a very definite policy in this respect, especially in connection with our dealings with the duPont Company (who are working on the principle of reciprocity while General Motors is not), as I am afraid there are instances where duPont salesmen have implied that they could influence General Motors' purchases. Nothing could be more detrimental to the morale of our Purchasing Agents, and to the general interests of our Corporation, than for any supplier to believe that anything can influence General Motors in choosing its sources of supply other than the three fundamentals of purchasing, namely—quality, service and price. I know you realize that as soon as any supplier feels that he can use collateral influence he is not as apt to give the utmost he can in quality, service and price to the one that deserves same, namely—the purhaser.

In refusing to give the duPont Company such information as requested by Mr. duPont, I have been guided by the following considerations:

(a)—The duPont Company in fact has no more right to such information than any of the other 60,000 stockholders in General Motors. We would not consider giving Mr. Cohen, the druggist— who might own five shares of General Motors stock—the amount of purchases General Motors made from Jones, McLaughlin Steel Company in order that he might sell Mrs. Jones face powder. (This is far-fetched but it is the same principle.)

(b)—If we supply the duPont Company with the amount of our purchases from any company they wish to sell, and their salesmen are allowed to display this information to their prospective customers, it necessarily follows that the impression would be made upon the customer that General Motors wishes that particular supplier to consider in dealing with General Motors its relationship with the duPont Company, or otherwise General Motors would not supply the duPont Company with the information.

(c)—The principle of reciprocity must imply that you are giving something in order to get something. If the duPont Company, in getting business, implies reciprocity on the part of General Motors' purchases, what does General Motors get? It would seem that in such reciprocity we are doing the "giving" and the duPont Company the "getting." If there is anything to be gotten our position should be to see that it is gotten for General Motors Corporation, rather than the duPont Company.

(d)—If our Purchasing Agents know that we are willing to allow the duPont Company to use our purchases to influence duPont sales, can we expect them to always resist giving weight to other considerations than the best interest of General Motors in placing their orders?

(e)—I think that we are all pretty well agreed that we could not afford to use the principle of reciprocity in General Motors' purchases. If that is true we certainly cannot allow anyone else to imply that they can use General Motors' purchases for the purpose of reciprocity.

In the particular case under consideration I see no difference in Mr. duPont using the information he has requested in order to retain business than for him to use same to get business. In my judgment, if the duPont organization are not able to retain the business they have through the quality of their goods and the service they render, then they should not be allowed to retain it because General Motors purchases goods from that particular customer of the duPont Company. The steel companies must know the amount of business they are doing with General Motors Corporation, and if being reminded of this volume of business by the duPont Company results in the steel companies being willing to do something for the duPont Company that they would not have done without such reminder, then we in General Motors are not getting all we should from the steel companies.

I am perfectly willing in this instance that this information be gotten together and given to Mr. duPont, as you have promised, but I do think that it is a very bad precedent to establish—unless I am wrong in the position I have been taking with the duPont Company for the past three or four years, in regard to not allowing them to display to their customers any figures of General Motors as to the volume of our purchases from suppliers who are now or prospective customers of the duPont Company.

If you think I am leaning backward in matters of this kind and trying to maintain an impractical ideal in our purchasing relations, please frankly say so as this is a very important matter and one in which I would like to be guided by your better judgment.

J. L. PRATT.

JLP:V

Defendant's Exhibit (GM) No. 202

7250

Letterhead of

E. I. DU PONT DE NEMOURS & COMPANY

WILMINGTON, DELAWARE

PAINT DEPARTMENT

October 23, 1922.

Mr. J. L. Pratt,
General Motors Corporation,
New York City.

Dear Pratt:—

I was talking with Mr. Coyne the other day relative to our Paint and Varnish Division getting a share of the up-keep paint for the Hyatt Roller Bearing Company and he advised me that you were the man with whom I should take up the matter. Our New York representative, Mr. Clause, has called on Mr. F. Weis and while we have been pleasantly received we do not seem to get any business. Would be glad to hear from you as to whether there is anything further we can do.

Your very truly

/S/ F. S. MACGREGOR.

fsm m

NOTE. In lower right hand corner is a stamped box in which appear the following stamped initials: A. P. S., J. A. H., J. L. P., L. R. B., W. M S., C. L. H., A. T. B., G. J. T. Next to J. L. P. appears the date 11/1/22 in pencil.

5048

Defendant's Exhibit (GM) No. 203

7251

November 1, 1922.

Mr. H. J. Forsythe, General Manager,
Hyatt Bearings Division,
Harrison, New Jersey.

Dear Mr. Forsythe:

I am enclosing herewith copies of correspondence with Mr. F. S. MacGregor in regard to paint requirements of Hyatt Bearings Company.

Will you please inquire into this subject and see just what the situation is.

Very truly yours,

General Manager
Accessory Divisions

JLP:V
enclosures

5049

7252

Letterhead of

E. I. DU PONT DE NEMOURS & COMPANY
Incorporated
Philadelphia, Pa.

January 9, 1926

Paint and Varnish Division

J. L. Pratt,
General Motors Corp.,
224 W. 57th St.,
New York, N. Y.

Dear John:

I have always promised myself that I would not add my name to the long list of people who are constantly asking favors from you for one thing or another. Just at this time, however, we have this lame duck of the duPont family well on its way to recovery and I am not going to miss any bets in securing every dollar's worth of business that I can get by honest means. This is the reason then for my asking you for a little help if it is consistent with your judgment.

The Delco Light Company have been purchasing for some time Rubber and Finishing Varnish from Lowe Brothers. Some little time ago these suppliers were asked to modify their product to meet the specifications of the Delco Light Company, but were unsuccessful in producing the desired results. About this time we walked into the picture with samples, which were reported as giving very satisfactory results. My information is that this satisfactory report was further backed up by the Delco people placing an order for one carload each of our Rubber and Finishing Varnish. After this order was placed we received a wire from the Delco people requesting that we with-

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hold production, for which they gave as a reason that Lowe Brothers were to be given another opportunity to adjust their trouble. We are confident that we will eventually secure a release for this order, but I could not resist the temptation to make doubly sure of this by asking your assistance. It is perfectly possible that I am making a mistake in doing this and that pressure from the outside might make them decide all the more to continue with Lowe Brothers. We are all human, you know. It is perfectly possible also that the reverse might be true and that a word from you would turn the trick. At any rate, I am going to leave it to your own good judgment as to whether or not you can advisedly assist us in this particular case. If you can, we shall be pleased. If you cannot, we will be just as appreciative of your frankly telling us so.

We have finished development and are preparing to manufacture our new brush member of the Duco family. It is one of the most wonderful products that the duPont

—2—

Company has ever attempted to manufacture. There is absolutely nothing on the market at this time that is any match for it. It is absolutely fool-proof and brushes so easily and flows out so smoothly that the crudest amateur can get a good job with it. We felt that there would be a natural prejudice on the part of master painters and contractors due to its quick drying properties, and also that it was such a radical change from the regular paint and enamel products. Consequently, we went out and picked up a lot of these painters and allowed them to try out this product. They are so loud in their praise and so enthusiastic regarding its possibilities that I am positive the duPont Company

will be obliged to take its hat off to the Paint and Varnish Division before the year is out.

With very best regards, I am,

Sincerely yours

/s/ JIM ELMS

jwe/eem

NOTE. At the top of the first page there is a stamped box containing the following stamped initials: A. P. S., J. L. P., L. R. B. Next to "J. L. P." is the handwritten date "1/11/25".

Defendant's Exhibit (GM) No. 205

7255

DELCO-LIGHT COMPANY
ELECTRIC LIGHT AND POWER PLANTS WATER SYSTEMS
FRIGIDAIRE AND OTHER ELECTRIC DEVICES
DAYTON, OHIO, U.S.A.

January 27, 1926.

OFFICE OF
PRESIDENT AND GENERAL MANAGER

Mr. J. L. Pratt, Vice President,
General Motors Corporation,
New York City.

Dear Mr. Pratt;—

Thanks for your letter regarding the paint situation.

We are going ahead with the duPont paint and the order will be released in due time through our regular channels.

I think you will be glad to know that the duPont paint can be secured at a better price than we can secure paint locally, so aside from helping the general situation, we are also lowering our costs.

Thank you very much for giving me the complete information about the duPont past history as connected with General Motors Corporation.

Yours very truly,

DELCO-LIGHT COMPANY

/s/ E. G. BIECHLER
General Manager

EGB/CL

NOTE. In lower right corner appears a stamped box containing the following stamped initials: A. P. S., J. L. P., L. R. B. There are some illegible initials next to "J. L. P."

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5053

Defendant's Exhibit (GM) No. 206

(GM)

July 16, 1926.

PERSONAL & CONFIDENTIAL

Mr. J. J. Moosman, Division Mgr.,
Chemical Products Division,
E.I.duPont deNemours & Co.,
Parlin, New Jersey.

Dear Joe:

In April we had some correspondence in regard to the service your Company was rendering our A. C. Spark Plug Company. In connection with this I am handing you copy of memorandum that has come to my desk today.

I don't know whether or not the suggestion of direct contact with the Parlin plant on experimental work, on the part of the A. C. Spark Plug Company, is practical. I know that certain things have to be done in a certain way for proper organization, and I do not wish to disorganize you to do what our A. C. Spark Plug Company thinks they must have.

Won't you please write me frankly how far you think you can go in meeting the wishes of the A. C. Spark Plug Company for somewhat more direct and prompt action than they are getting under present conditions?

Very truly yours,

Vice President.

JLP:V
enclosure

Defendant's Exhibit (GM) No. 207 7257

Letterhead of

E. I. DU PONT DE NEMOURS & COMPANY
Incorporated

CHEMICAL PRODUCTS DIVISION.
PRALIN, NEW JERSEY

July 23, 1926.

PERSONAL

Mr. John L. Pratt, V. B.
General Motors Corporation
224 W. 57th St.
New York City.

Dear John:

I have delayed reply to your kind letter of the 16th in the hope of being able to give you the complete story, but I have not been able to get to Detroit this week and think it would be best to delay final answer until I can discuss the matter with Mr. Sohlinger. I expect to see him in Wilmington next Wednesday (July 28) and hope to find some way of getting the matter straightened out to everybody's satisfaction immediately thereafter.

Perhaps it would be best to comply with Mr. Knight's suggestion that he be permitted to deal directly with Parlin, if only to satisfy him; but I am afraid if we make a special exception in his case and try to handle his business outside of the regular channels, he may find himself "out of the frying pan into the fire". As you know, we are maintaining an expensive sales organization in Detroit for the express purpose of giving more satisfactory service to our customers, and I hesitate to do anything that may result in

5055

giving Mr. Sohlinger's organization the impression that they are relieved of any further responsibility in connection with the A. C. account.

I presume it is hardly necessary for me to add that this new development is a keen disappointment to me, as I kept in touch with the situation myself since the receipt of your previous letter up to the time that I was assured by a personal visit to the A. C. Plant five or six weeks ago that everything was being handled to their entire satisfaction. I was unable to see Mr. Knight at that time, but talked with Mr. Wells, the Purchasing Agent, and one of his assistants.

Yours very truly,

/s/ J. J. MOOSMAN
Division Manager.

JJM:HL

NOTE. To right of date is a stamped box containing the following stamped initials: A. P. S., J. L. P., L. R. B. A set of illegible handwritten initials appears opposite "J. L. P."

Defendant's Exhibit (GM) No. 208

7259

Letterhead of

E. I. DU PONT DE NEMOURS & COMPANY

CHEMICAL PRODUCTS DIVISION

PARLIN, NEW JERSEY

July 29, 1926.

PERSONAL

Mr. John L. Pratt,
Vice President,
General Motors Corp.,
224 West 57th St.,
New York City.

Dear John:

In accordance with my letter of the 23rd, I discussed the A. C. Spark Plug situation with Mr. Sohlinger in Wilmington yesterday.

We decided that the best thing to do is to have Mr. Sohlinger see Mr. Knight, and he will do this early next week, probably Monday or Tuesday. I will advise you in due course of the results.

Very truly yours,

/s/ J. J. MOOSMAN
Division Manager

JJM:ML

NOTE. To right of date, there is a stamped box containing the following sets of stamped initials: A. P. S., J. L. P., L. R. B. There are some illegible handwritten initials next ot "J. L. P."

Defendant's Exhibit (GM) No. 209

7260

Letterhead of

E. I. DU PONT DE NEMOURS & COMPANY
CHEMICAL PRODUCTS DIVISION
Parlin, New Jersey

August 17, 1926.

Mr. John L. Pratt,
Vice President,
General Motors Corp.,
224 West 57th St.,
New York, N. Y.

Dear Mr. Pratt:

Supplementing my letter of July 29th, I quote the following report dated August 5th received from Mr. Sohlinger during my absence from the office:

"Relative to the correspondence which you have had with Mr. Pratt regarding complaints by the A. C. Spark Plug Company, on Tuesday of this week I discussed the situation with Mr. Champion and also with Mr. Knight.

Mr. Knight is going to work closely with Ed. Conde on any new developments, which the A. C. Spark Plug Company will need, and in case there is any further complaint, Albert Champion will take the subject up with me."

Conde is the Chief Chemist of our Flint Plant, which as you know is located just around the corner from the A. C. Factory. He has had a great deal of experience in pyroxylin solutions, particularly with reference to adapting these products to the requirements of individual consumers;

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(GM)

I therefore feel sure this arrangement will result in giving entire satisfaction to Mr. Knight.

Yours very truly,

/s/ J. J. MOOSMANN
J. J. Moosmann, Division Manager

NOTE. To right of date appears a stamped box containing the following set of stamped initials: A. P. S., J. L. P., L. R. B. The handwritten date "8/20" appears opposite "J. L. P."

Defendant's Exhibit (GM) No. 210

(GM)

7262

August 20, 1926.

Mr. J. J. Moosmann, Division Mgr.,
Chemical Products Division,
E. I. duPont deNemours & Co.,
Parlin, New Jersey.

Dear Joe:

Please accept my thanks for your letter of August 17th about arrangements which have been made to give Mr. Albert Champion the kind of service he thinks he should have. I trust that the new arrangement will be satisfactory.

Thanking you for your attention to same,

Very truly yours,

Vice President

JLP:V

5069

E

Defendant's Exhibit (GM) No. 211

7263

January 31, 1929

Mr. Ed F. Fisher

J. L. Pratt

Dear Ed,

I am enclosing herewith a letter from Mr. W. F. Harrington of the E. I. duPont de Nemours & Co., which I think is self-explanatory.

If you think anything constructive can be done along the lines of what Mr. Harrington is thinking, I would be very glad to put him in contact with anyone in your organization that you might suggest.

Very truly yours,

Vice-President.

JLP:CLM

E

Defendant's Exhibit (GM) No. 212

7264

Letterhead of

FISHER BODY CORPORATION

DETROIT, MICH.

February 8, 1929.

Mr. J. L. Pratt,
General Motors Corporation,
New York City.

Dear John:

I have your note of January 31st with letter from the Dupont Company attached. After reading this letter over and giving it quite a little thought I cannot see where their suggestion would be of very much help to us. Our trouble with fabrics is mostly the variation in color and I personally don't think that this is due to the dyes that are used as much as it is the process of dyeing. We have this same trouble with all of the manufacturers of fabrics we are dealing with and have dealt with, so I am sure that it is just one of those things that the manufacturer is up against and can't eliminate. We are after them continually and they try to hold it down to a minimum as much as possible. If we attempted to dictate in any way to the manufacturers of fabrics, as to the kind or quality of dyes they use, I think that every time something came up that was wrong they would pass it on to us and say that we specified this or that and that we should be held responsible. I am sure that I or anyone else in our organization would not care to accept this responsibility. If we had this trouble with only certain

5052

manufacturers and it could be traced back that they all used the one make of dye, then there might be something worthwhile looking into regarding the quality of dyes used; but I am sure that they are all using different makes of dyes and it cannot be attributed to that.

We are very thankful for Dupont's offer and appreciate it very much. I am leaving for Seattle tomorrow night and upon my return the first time any of the officials of Collins & Aikman or of any of our other sources of supply for fabrics are here, I am going to have a talk with them.

Very truly yours,

/S/ E. F. FISHER

EFF.S

Defendant's Exhibit (GM) No. 213

7266.

Hasen & Hanger Company, Inc.

ESTABLISHED 1827

[redacted]

EXECUTIVE OFFICES
NEW ADDRESS
500 FIFTH AVENUE
NEW YORK

September 28, 1931.

Mr. John L. Pratt, Vice Pres.,
General Motors Corp.,
1775 Broadway,
New York City

Dear John:

Attached hereto is a letter from Guy Van Sant which is self-explanatory.

I believe from what he has told me that he has on hand some Appalachian Oak of good quality, and if you or any of your subsidiary companies are in the market for this material, he is prepared to sell at satisfactory prices.

If you think it worth while, I will very much appreciate it if you will put him in touch with the proper men.

Yours sincerely,

Peter B. Hasen

SBM:T

encl.

Defendant's Exhibit (GM) No. 214 7267

September 30, 1931

Mr. Silas B. Mason,
Mason & Hanger Co.,
500 Fifth Avenue,
New York, N. Y.

Dear Silas:

I have your letter of September 28th, enclosing one from Mr. Van Sant, and I am enclosing herewith copy of letter today written to Mr. E. F. Fisher, who is responsible in the Fisher Body organization for their lumber requirements.

I am under the impression that there is a good deal of distress lumber on the market at present and that we have been able to buy our recent requirements at very attractive prices.

I had hoped to get together with you this week but was unable to locate you Monday or Tuesday, and as I am leaving town tomorrow I will have to postpone the pleasure of seeing you until I return.

With kind regards,

Very truly yours,

JLP:V

5065

Defendant's Exhibit (GM) No. 215 7268

September 30, 1931

Mr. Edward F. Fisher, Vice President,
Fisher Body Corporation,
Detroit, Michigan.

Dear Ed:

I am enclosing herewith letter from the Appalachian Lumber Company, of Lexington, Kentucky, which was passed on to me by a friend, Mr. Silas Mason, in regard to dry white oak lumber which the above company has for sale.

If you are going to be in the market in the near future for any additional white oak lumber I would appreciate if you would give the Appalachian Lumber Company an opportunity to bid on same.

Very truly yours,

Vice President

JLP:V
Enc.

E

5055

Defendant's Exhibit (GM) No. 216

7269

FISHER BODY CORPORATION

DIVISION OF GENERAL MOTORS CORPORATION

DETROIT, MICHIGAN

OCTOBER 16, 1931.

MR. J. L. PRATT,
GENERAL MOTORS CORPORATION,
DETROIT, MICHIGAN.

DEAR JOHN:

YOUR LETTER AT HAND WITH LETTER ATTACHED FROM THE APPALACHIAN LUMBER COMPANY OF LEXINGTON, KENTUCKY. I AM AFRAID THAT THE LOCATION OF THIS COMPANY WILL BE TO THEIR DISADVANTAGE, OWING TO SHIPPING TO THE PLANTS WHERE WE ARE USING OAK GENERALLY.

HOWEVER, I HAVE TURNED YOUR LETTER OVER TO MR. CLAUDE CRUSOE AND HAVE ASKED HIM TO SHOW THEM THE COURTESY OF LETTING THEM FIGURE ON SOME OF OUR RELEASES.

VERY TRULY YOURS,

E. F. Fisher

EFF:S

5087

Defendant's Exhibit (GM) No. 217 7270

P. S. du Pont
Wilmington, Del.

May 27th, 1926.

Mr. John L. Pratt, Vice-President,
General Motors Corporation,
Detroit, Michigan.

Dear Mr. Pratt:

Some days ago I had a visit from Mr. Charles N. Hickok of the M. A. Hanna Co., of Cleveland, Ohio. While Mr. Hickok devotes his time to the ore end of the business, he inquired as to how he and Mr. Hanna might get in touch with those of the General Motors Corporation who are interested in pig iron. Mr. Sloan refers me to you in this matter. Therefore, if Mr. Hickok or Mr. Hanna should call upon you, I hope that you may be able to give them the information that they desire. As a matter of fact, I believe that their chief interest is to become personally acquainted with the General Motors crowd.

Very truly yours,

Pierre S. du Pont.

17

Note: Routing stamp in upper right hand corner has 6/8 written after J.L.P.

E

Defendant's Exhibit (GM) No. 218 7271

Defendants' Trial Ex. No. GM-218

June 8, 1926.

Mr. P. S. duPont,
Wilmington,
Delaware.

Dear Mr. duPont:

I have your letter of May 27th in regard to the visit you had with Mr. Charles N. Hickok of the M. A. Hanna Company of Cleveland, Ohio.

I do not know whether Mr. Hickok advised you that the M. A. Hanna Company are now receiving practically all of our business in pig iron except high silicon iron. This is under contract made during Mr. Durant's regime in 1920, for a ten year period, and is a contract which I think we will be very glad to cancel as it has worked very much to our disadvantage.

I will be very glad to see Mr. Hickok or Mr. Hanna at any time.

Very truly yours,

Vice President.

JLP:V

E

5089

Defendant's Exhibit (GM) No. 219 7272

September 16, 1926.

Mr. Alfred Slone, Pres.,
General Motors Corp.,
224 West 57th St.,
New York, N. Y.

Dear Alfred:—

In one of the reports considered at the last meeting of the Finance Committee, there was mentioned an investigation now being made into the manufacture of copper tubing —it being stated that it was found impossible to secure satisfactory assurance of our supplies.

Mr. Grubb has recently been negotiating with the American Brass Company, for the sale to them of our Everdur business. He reports that in conversation with Mr. Weaver, Vice President of the American Brass Company, in charge of sales, Mr. Weaver states that he understood General Motors Corporation was concerned over their supply of tubing, and that General Motors Corporation could rest assured that the American Brass Company would take care of their requirements at any time desired, indicating that they were perfectly willing to build whatever additional capacity might be required.

Yours very truly,

LduP:M

NOTE. "File Copy" printed diagonally across face of page.

Defendant's Exhibit (GM) No. 220 7273

Letterhead of
GENERAL MOTORS CORPORATION
224 West 57th Street
New York

September 20, 1926.

Mr. Lammot duPont,
E. I. duPont deNemours & Company,
Wilmington, Delaware.

My dear Lammot:—

Thanks for yours of the 16th. Mr. Pratt knows more about this than I do and I have referred the matter to him and he will take it up with you on account of the fact that I am going to be away for a month, abroad, leaving on Wednesday.

I think perhaps that there is more to it than the question of supply. In view of the fact that our requirements are large and getting larger, it undoubtedly is more convenient and profitable for us to have the matter under our own control. Probably the return on the capital employed is large enough to justify us doing so. However, Mr. Pratt will write you fully on the matter.

Very truly yours,

/s/ Alfred P. Sloan, Jr.

APSJr./K

Note. "Received Sep 22 1926 Lammot Du Pont" stamped at top.

E 5071

Defendant's Exhibit (GM) No. 221

7274

Letterhead of

GENERAL MOTORS CORPORATION
224 WEST 57TH STREET
NEW YORK

September 28, 1926.

Mr. Lammot duPont,
E. I. duPont deNemours & Co.,
Wilmington, Delaware.

Dear Mr. duPont:

Referring to your letter of September 17th, in regard to General Motors' interest in the manufacture of copper tubing.

We have no doubt but that the American Brass Company are in position to take care of our requirements, but at a price satisfactory to the American Brass Company.

In our Delco-Light Company alone we will have orders for about $7,000,000 worth of copper tubing this next year. With the base price of copper at 14¢ a pound, we are paying approximately 31¢ a pound for copper tubing.

The manufacture of copper tubing of the size we use is in the hands of a number of small manufacturers. All of these small manufacturers purchase their raw material from the American Brass Company, who seem to control the machinery in America for producing large size copper tubing, three-quarter standard iron pipe size. As far as we know the American Brass Company do not solicit business smaller than the three-quarter standard iron pipe size. They sell this size pipe to our suppliers at what seems to us to be an exorbitant price, of approximately 21¢ a pound. We

[illegible]

are of the impression that there is an arrangement whereby the American Brass Company refrains from going into the manufacture of small sizes of tubing, while the manufacturers of small size tubing purchase their raw material for this size tubing from the American Brass Company.

Our investigation is not directed towards increasing capacity but towards getting a more satisfactory tubing at a lower price.

Very truly yours,

/s/ J. L. PRATT
Vice President.

JLP:V

NOTE. "Received Sep 29 1926 Lammot Du Pont" stamped at top.

Defendant's Exhibit (GM) No. 222

7276

September 30, 1926.

Mr. John Pratt, V. P.,
General Motors Corporation,
224 West 57th Street,
New York City, N. Y.

Dear Mr. Pratt:

Thanks for yours of September 28th in regard to copper tubing and the American Brass Company.

I have no interest in the company, nor has anyone approached me who has an interest. I have been impressed with the very satisfactory relations we have had with these people in the Everdur matter and believe that if you or someone else in authority went direct to the head of the American Brass Company and got right down to "brass tacks" the General Motors Corporation would get fair dealing and good results without the necessity of making an investment.

Yours very truly,

PRESIDENT.

LduP/MD

72777

Defendant's Exhibit (GM) No. 223

Letterhead of
GENERAL MOTORS COMPORATION
224 West 57th Street
New York

October 1, 1926.

Mr. Lamott duPont, President,
E.I.duPont deNemours & Co.,
Wilmington, Delaware.

Dear Mr. duPont:

Please accept my thanks for your letter of September 30th in regard to the American Brass Company.

For your information we have practically completed our investigation of copper tubing and it looks as if it would not be advisable at this time for us to make an investment in order to enter into the copper tubing business.

In regard to the American Brass Company, they are in production of small size tubing in a small way and I understand would like some guarantee from us before they would be willing to put in equipment to take care of part of our requirements. It now looks as though our present suppliers will be able to take care of our requirements for the next couple years, and we do not feel we should make any overtures to the American Brass Company in order

to get them actively engaged in copper tubing, which would seem to be naturally a branch of their business.

Very truly yours,

/s/ J. L. PRATT
Vice President.

JLP:V

NOTE. The handwritten name "John Pratt" appears at top. "Received Oct 2 1926 Lammot Du Pont" stamped at top.

Defendant's Exhibit (GM) No. 224

7279

LAMMOT DU PONT

Wilmington, Delaware

P .O. Box 303

September 22, 1926.

Mr. John Pratt, Vice Pres.,
General Motors Corp.
224 West 57th St.,
New York, N. Y.

Dear John:—

I am enclosing letter from Jack Sproul of the General Refractories Company, dated September 20th, also letter dated September 11th by A. A. Wedderspoon, both in regard to the possibility of the General Refractories Company receiving some orders for firebrick from the Remy Company, Anderson, Ind. These letters were sent me through Mr. T. C. DuPont.

Jack Sproul is the son of Governor Sproul of Pennsylvania, who is a good friend of ours, and we would greatly appreciate it if some business could be turned his way. We, of course, do not ask that he be given any orders for firebrick, or anything else, without justification, and feel that we are justified in asking that the General Refractories Company, which is a well known concern, of good reputation, be given an opportunity to bid, and receive some

consideration if prices, quality and service are at least on a part with their competitors.

We will greatly appreciate anything that can be done.

Yoursd sincerely,

/s/ LAMMOT DU PONT

LduP:M

NOTE. To right of date there is a stamped box in which appear the following stamped initials: A. P. S., J. L. P., L. R. B. The handwritten date "10/2" appears opposite "J. L. P."

Defendant's Exhibit (GM) No. 225 - 7281

October 2, 1926.

Mr. Lammot duPont, President,
E. I. duPont deNemours & Co.,
Wilmington, Delaware.

Dear Mr. duPont:

I have your letter of September 22nd, enclosing correspondence from Mr. Jack Sproul, of the General Refractories Company.

I am having this matter investigated but I do not believe the intimation given in his letter—that they do not have a look-in on General Motors' business—is true. Mr. Sproul's approach of trying to bring influence to bear in order to get business from General Motors Corporation will not work. If this Company can satisfy our Divisions that they have a product competitive from the standpoint of quality, price and service, I know our Divisions well enough that if the General Refractories Company's representatives go after the business they will have an opportunity to quote, and while I do not claim that our Purchasing Departments are 100% pure, I do believe we have a spirit in our Purchasing Departments of always attempting to get the best as they see it for General Motors Corporation. For this reason we have always hesitated to suggest any firm for special consideration.

We believe it is the duty of the supplier to establish the merits of his product to our Corporation, and not our duty to ask our Purchasing Departments to give special consideration to any firm. We have reviewed a number of cases of suppliers who complain they have not had fair treatment, but I have not yet found a case where it had not been due

largely to the supplier's own negligence in getting on the job himself in time for proper consideration in order to sell the Corporation.

On account of your interest in the matter I am having this particular case looked into and will advise your further.

Very truly yours,

Vice President.

JLP:V

Defendant's Exhibit (GM) No. 226

7283

October 25, 1926

Mr. Lammot duPont, President,
E.I. duPont deNemours & Co.,
Wilmington, Delaware.

Dear Mr. duPont:

Referring to your letter of September 22nd and my reply of October 2nd, concerning the General Refractories Company, wherein I promised to investigate this situation and advise you further.

I find that General Motors' purchases of fire brick have averaged about $150,000 per year. A canvass of our Purchasing Agents shows that there are no instances where the General Refractories Company have not been given an opportunity to bid on our refractory business. In the case complained of—the Remy Electric Company at Anderson, Indiana—competitive companies have been most helpful in determining the type of fire brick that gave the lowest maintenance cost in the boilers and type of fuel used at Anderson, and on account of this help they were given prime consideration in the placing of business.

From my check-up I do not believe that the General Refractories Company has any right to complain of their treatment by General Motors' divisions, and I think the greatest assistance you can give the General Refractories Company will be to impress on Mr. Sproul the necessity of his organization working closely with our organizations to help them determine what fire brick will give General Motors Corporation the best results for the money expended.

Thanking you for your interest in this matter,

Very truly yours,

Vice President.

JLP:V

Defendant's Exhibit (GM) No. 227

7284

Wilmington, Del., January 29, 1931.

Mr. John Pratt, Vice-President,
General Motors Corporation,
New York City, N. Y.

Dear John:

I have just had a talk with Mr. G. D'A. Belin, President of E. I. du Pont de Nemours & Company of Penna., supplying the anthracite district with explosives, and with Mr. J. W. McCoy, General Manager of our Explosives Department, regarding the attitude of the anthracite coal companies toward General Motors' prospective move into the manufacture and sale of domestic oil burners.

From what I now learn, the anthracite coal companies are very much wrought up on this subject. It is beyond my understanding how they can consider the matter so seriously in view of the number of oil burners already in the market, but nevertheless I am assured and am satisfied that they are so wrought up.

I am convinced that the outlook for du Pont business in the anthracite field is jeopardized seriously and am equally convinced that du Pont cannot dictate to General Motors with respect to their going into the oil burner business, nor can the advantage or disadvantage to du Pont be considered at all as a factor by General Motors in reaching a decision.

As a General Motors man, I would like to point out the following factors which seem to me to have a bearing on the case.

5082

1. The anthracite coal companies have shown an aggressive attitude and a vindictive spirit in threats to the du Pont Explosives Department, and are therefore likely to put an embargo on the use of General Motors' products throughout the anthracite industry.

2. It is not a long step from oil burners replacing anthracite coal to oil burners replacing soft coal. It would not be at all surprising if the anthracite coal companies suggested to the soft coal companies that they too put an embargo on General Motors' products.

3. The anthracite coal companies certainly yield some influence, if they do not have a direct connection with the Eastern railroads.

4. It is a matter of general belief, and can be readily checked by inquiry, that the manufacture and sale of oil burners are not generally profitable in spite of the fact that there are apparently entirely satisfactory oil burners already on the market. If General Motors activities in experimenting with oil burners were transferred to experiments with anthracite coal burners, the friendship of the coal companies would certainly be acquired.

If I have an opportunity on next Tuesday or Wednesday, would like to hear your reaction to the above.

Yours very truly,

LduP/MD CHAIRMAN OF THE BOARD.

Defendant's Exhibit (GM) No. 228

7286

GENERAL MOTORS CORPORATION
Broadway at 57th Street
New York, N. Y.

February 6, 1931

Mr. Lammot duPont,
Chairman of the Board,
General Motors Corporation,
Wilmington, Delaware.

Dear Mr. duPont:

This will acknowledge receipt of your letter of January 29th, as well as letter dated February 2nd to you from Mr. G. d'A. Belin, in regard to the attitude of the anthracite coal companies towards General Motors manufacture and sale of oil burners.

General Motors for a great many years, as you know, has been manufacturing Delco light plants which are used largely on farms, isolated road houses and oil stations. There are something over 100,000, as near as we can estimate, of these plants in use. On account of the extension of high powered lines to rural districts this business has not expanded in recent years. We have a loyal dealer organization that are very anxious to keep in business, and to give them something to sell in that part of their territory that has been taken over by high tension lines it was necessary for us to consider additional products, and in line with this a number of years ago we brought out a line of pumps, both for deep wells and shallow wells. This part of our business has been growing. Our boys have been working on a fur-

ther line of motor equipped household appliances which could be supplemented with the business of our Delco-Light dealers, and among the things considered have been washing machines, oil burners, vacuum cleaners, and a kitchen aid - all designed with the idea of making country life easier and more attractive.

It is in connection with this development that we have taken over the Rickard Oil Burner Company, which consisted of one man - Mr. Rickard, an engineer. We have paid him $20,000. for his drawings, designs and development expense. We have spent $6,000. in tools for the purpose of making a limited number of oil burners which will be tried out in the territory of one Delco-Light distributor, who is located at Rochester, N. Y.

It will probably require two years to make this demonstration as to whether or not the burner we are undertaking to develop will require excessive service. No effort will be made to market this oil burner nationally or in other territories except around Rochester, until it is known whether the burner is successful and can be made and sold at a profit.

In the past we have had sufficient courage to recognize mistakes and abandon developments which it seemed impossible to make profitably, and I hope the management of General Motors Corporation can be counted on to follow the same policy in regard to the oil burner. On the other hand, if the oil burner can be manufactured and marketed at a profit, and it will supplement those utilities the Corporation is undertaking to market, that will make life more comfortable, I think we would be cowardly in abandoning same at

this time because a poorly led association of coal producers did not recognize that the world progresses, and that any company that hopes to succeed has to take a part in progress.

The agitation among the anthracite coal producers in regard to oil burners is nothing compared with the agitation we had a few years ago from ice manufacturers associations against Frigidaire, and a great many threats were made that ice manufacturers would not buy General Motors products if we continued with the development of Frigidaire. At that time we took the position that if household refrigeration was an improvement over ice boxes General Motors would not reap any permanent ill-will by proceeding on sound business lines to promote iceless refrigeration. We believe the same line of reasoning holds in the case of oil burners, and while we do not believe in doing anything to stir up antagonism of any portion of any industry, we do believe that if any industry takes an unsound position in regard to any activity of the Corporation that is no reason for us to discontinue that activity.

Personally I would like you to agree that General Motors should proceed with its experimental work on oil burners, but on account of the position that the anthracite coal producers have taken that we suppress as much as possible any publicity in regard to this experimental work, which unfortunately has already obtained more publicity than the importance of the activity justifies.

Very truly yours,
/S/ J. L. Pratt
Vice President

JLP:V

NOTE. At top of page 1 are Lammot du Pont stamps Received Feb 9 1931 and answered Feb 23 1931.

Defendant's Exhibit (GM) No. 229

7289

EXECUTIVE COMMITTEE
GENERAL MOTORS CORPORATION

Minutes of meeting No. 328 held at the office of the Corporation in the General Motors Building, Detroit, Michigan on Thursday, January 21, 1932 at 9:30 A. M. in accordance with notice duly given by the Secretary.

PRESENT: Messrs. A. P. Sloan, Jr.
Donaldson Brown
Lammot duPont
C. T. Fisher
L. P. Fisher
J. L. Pratt
J. T. Smith

This was a Joint Meeting with the Operations Committee

ABSENT: Messrs. F. J. Fisher
W. S. Knudsen

The Chairman, Mr. Alfred P. Sloan, Jr., presided, and the Secretary, L. R. Beardslee, recorded.

* * *

—2—

Executive No. 328
January 21, 1932

—9—

GENERAL MOTORS POSITION IN THE HOUSEHOLD APPLIANCE FIELD

Report was received from Vice-President J. L. Pratt dated January 18, 1932 (OC-1161) dealing with the question of General Motors position in the Household Appliance Field and particularly recommending that the Delco Appliance Division be permitted to go ahead with the manufacture and sale of oil burners in a small way, with

5097

the understanding that no substantial investment will be required.

Upon motion, this report was accepted and the recommendations contained therein, approved.

• • •

—3—

Upon motion, the meeting adjourned.

L. R. Beardslee,
Secretary

—4—

I, GEORGE A. BROOKS, SECRETARY OF GENERAL MOTORS CORPORATION, do hereby certify that the attached photostat is a true and correct copy of minutes of meeting of the Executive Committee of General Motors Corporation, held January 21, 1932.

IN WITNESS WHEREOF, I have hereunto set my hand and affixed the seal of the Corporation this 15th day of December, 1952.

George A. Brooks
George A. Brooks, Secretary

SEAL

2

Defendant's Exhibit (GM) No. 230

7291

Letterhead of

E. I. DU PONT DE NEMOURS & COMPANY
DYESTUFFS DEPARTMENT
WILMINGTON, DELAWARE

August 12, 1926.

Mr. John L. Pratt, Vice-President,
General Motors Corporation,
New York City.

Dear Jack:

With reference to your letter of August 10th, regarding Methyl Chloride, our Dr. Frei, who is a former Badische man, is now with us here and tells us that he is quite familiar with the process used by the Badische Company for making Methyl Chloride. We have also carried out some laboratory work on this process and believe that we are in a good position to go ahead with the manufacture of this product. We would therefore appreciate it very much if you would give us an opportunity to bid on your first year's business rather than have to wait for a year before we can expect to obtain any share of it.

With kind regards,

Sincerely yours,

/s/ W. F. HARRINGTON
W. F. HARRINGTON
GENERAL MANAGER.

NOTE. To the right of date appears a stamped box containing the following stamped initials: A.P.S., J.L.P., L.R.B. The handwritten date 8/13 is superimposed on the box.

7292

December 29, 1925.

Mr. W. B. Foster,
E.I.duPont deNemours & Co.,
Wilmington, Delaware.

Dear Mr. Foster:

Referring to our telephone conversation this morning, we will be very glad if you will arrange that Mr. Minor or Mr. DeBlois, of your department, go to Dayton, Ohio, and inspect the installation recently made at our Delco-Light plant, from a risk standpoint, for charging Frigidaire machines with SO_2 gas.

Also while there we would like them to inspect the installation made in our Moraine plant of the Delco-Light Company for spraying Frigidaire cabinets with Duco.

We are anxious to assure ourselves that everything practical has been done to remove hazards of fire and health in the use of Duco and SO_2 gas. We would appreciate very much any suggestions by whoever you send as to ways or means that might make these installations more satisfactory.

Whoever you send should get in touch, upon arrival in Dayton, with Mr. E. G. Biechler, General Manager of the Delco-Light Company. If Mr. Biechler does not happen to be in Dayton at the time, Mr. T. L. Fordham, Factory Superintendent, will see that your representative has an opportunity to examine the installations.

Thanking you, and wishing you a very Happy New Year, I am

Very truly yours,

Vice President.

JLP:V

copy to Mr. E.G.Biechler

5099

Defendant's Exhibit (GM) No. 231

August 13th, 1926.

Mr. W.F.Harrington, 72293
General Manager, Dyestuffs Depart.,
E.I. Du Pont De Nemours & Co.,
Wilmington, Delaware.

Dear Buck:

I have your letter of August 12th on Methyl Chloride, and if you have definitely decided to manufacture Methyl Chloride, and you are sure that there will be no hold up in deliveries to us due to lack of experience, I have no objection to your organization contacting with our Delco-Light Company at once, and quoting on supplying them with a part of their Methyl Chloride.

Thanking you for your interest in this matter, I am,

Yours very truly,

JLP.F

Vice President

Defendant's Exhibit (GM) No. 232 7294

December 29, 1925.

Mr. W. B. Foster,
E.I.duPont deNemours & Co.,
Wilmington, Delaware.

Dear Mr. Foster:

Referring to our telephone conversation this morning, we will be very glad if you will arrange that Mr. Minor or Mr. DeBlois, of your department, go to Dayton, Ohio, and inspect the installation recently made at our Delco-Light plant, from a risk standpoint, for charging Frigidaire machines with SO_2 gas.

Also while there we would like them to inspect the installation made in our Moraine plant of the Delco-Light Company for spraying Frigidaire cabinets with Duco.

We are anxious to assure ourselves that everything practical has been done to remove hazards of fire and health in the use of Duco and SO_2 gas. We would appreciate very much any suggestions by whoever you send as to ways or means that might make these installations more satisfactory.

Whoever you send should get in touch, upon arrival in Dayton, with Mr. E. G. Biechler, General Manager of the Delco-Light Company. If Mr. Biechler does not happen to be in Dayton at the time, Mr. T. L. Fordham, Factory Superintendent, will see that your representative has an opportunity to examine the installations.

Thanking you, and wishing you a very Happy New Year, I am

Very truly yours,

Vice President.

JLP:V

copy to Mr. E.G.Biechler

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5092

Defendant's Exhibit (GM) No. 233

FRIGIDAIRE CORPORATION

SUBSIDIARY OF GENERAL MOTORS CORPORATION

7295

DAYTON, OHIO, U.S.A.

OFFICE OF
PRESIDENT AND GENERAL MANAGER

July 31, 1929

Mr. J. L. Pratt, Vice President,
General Motors Corporation,
New York City.

Dear Mr. Pratt:-

Thanks for your letter of July 30 relative to Mr. Midgley and the new refrigerant.

I had a long talk with Mr. Midgley and Mr. Keilholtz today, and I believe we are up to a point where we should be receiving sufficient refrigerant per month so that we can put it into at least 1,000 Frigidaires every thirty days, which will give us some real practical experience as to its value, reliability, etc.

You know much more about chemical manufacturing than I do, but I have been thinking about this for some little time, and we are of the opinion here that what we should do is put up a shack on some of our property at Moraine and put a few chemical men there, along with enough equipment, so that we can make this new refrigerant ourselves for the practical experience. At the present time, we are making about three pounds a day, but this of course is too small an amount. We feel since the matter is in the experimental stage, that it would be foolish for us to let the manufacturing get out of our hands, particularly when we believe we could get ready to do this for a reasonable amount of money. Mr. Midgley, in connection with Mr. Williams, Dr. Kahoe and others will work out a project, and I hope the entire subject would stay within a scope of $50,000; at least this is the way we are proceeding, and I thought I would write you this tentative note now, so you could be thinking about it.

Please bear in mind we are open minded on the subject, and want to proceed in the most practical, sensible and economical manner. If everything works out as to what would be done in the future as to its manufacture, it of course would be a subject of conferences and discussions as to how, where and the manner in which we could do it. One thing is certain, if the problem is as near solved as it looks like it is, the quicker we can determine we have the right thing, the better off we will be. Nothing would please me more than to spring a thing like this on our most radical competitor, and I wish we had it today rather than waiting six months or a year, which we no doubt will have to do until it is definitely worked out.

Yours very truly,

General Manager

EJB/CL

NOTE: Stamp in upper right hand corner reads: "J. L. Pratt answered—noted" with 8/2 written therein.

5093

August 2, 1929

Mr. E. G. Biechler, General Mgr.,
Frigidaire Corporation,
Dayton, Ohio.

Dear Mr. Biechler:

I am in receipt of your letter of July 31st, in regard to the new refrigerant being developed by Mr. Midgley.

By all means I think we should make a set-up to produce sufficient of this chemical to prove its cost and availability for use in refrigeration machines. As to whether or not we should eventually manufacture same, in my judgment should depend a great deal on the sources of the ingredients from which it is manufactured. Without knowing anything about the constituents of this material, it might be possible that some of the constituents are by-products of other chemical manufacture, which might make it desirable and economical for us to have same manufactured rather than make it ourselves.

We would certainly look with favor on the expenditure of sufficient money to prove out what we have so far developed—as a refrigerant that would accomplish what I understand we hope to be accomplished by this particular refrigerant—would be very valuable for Frigidaire.

Very truly yours,

Vice President.

JLP:V

E

Defendant's Exhibit (GM) No. 235

7297

Letterhead of

FRIGIDAIRE CORPORATION

Subsidiary of General Motors Corporation

DAYTON, OHIO, U.S.A.

OFFICE OF
PRESIDENT AND GENERAL MANAGER

September 28, 1931,
(Dict. Sept. 26)

Mr. J. L. Pratt, Vice-President
General Motors Corporation,
New York, N. Y.

Dear Mr. Pratt:

I am enclosing herewith certain information on lithium minerals about which you and I have talked several times.

If Dr. Bichowsky's report is correct, it would seem that, relatively speaking, there is rather a limited supply of lithia mined at the present time and, accordingly, if our lithia system proves to be successful, based upon the fact that there are 50 pounds of lithia required for each "radiator", facilities would have to be provided for someone to make more lithia available at reasonable prices. Based on an average of twelve "radiators" per home, there would be required 600 pounds. It is anyone's guess as to how many systems could be sold, but it certainly wouldn't be an interesting business unless we could sell, say, 5,000 systems a year, so this in itself would require a minimum of 3,000,000 pounds.

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We feel that, in quite a way, an additional investigation of the situation should be made, and we would be pleased to know whether you will assign this investigation directly to some person, or whether we should go ahead in our own way.

Dr. Bichowsky, of course, would be glad to assist in any manner whatsoever, should you want additional information.

Very truly yours,

/S/ E. G. BIECHLER
General Manager

EGB:MLW
Att.

NOTE. "J. L. Pratt, Answered—Noted" is stamped at top of document. A pencil check mark appears within the stamp.

Defendant's Exhibit (GM) No. 236

7299

E. I. DU PONT DE NEMOURS & COMPANY

Wilmington, Delaware

VICE-PRESIDENT'S OFFICE

October 6, 1931.

Mr. John Lee Pratt,
Vice-President,
General Motors Corporation,
57th Street & Broadway,
New York City.

Dear John:

Robbie passed on to me the other day your suggestion as to our possible interest in the manufacture of Lithium Chloride. I have passed this along to Grasselli as I believe that Grasselli would be the one best suited to manufacture a product of this character.

With very best regards, I am,

Yours very truly,

/S/ W. F. HARRINGTON
Vice-President.

WFH/G

NOTE. "J. L. Pratt answered—Noted" is stamped at top of document. A pencil check mark appears therein.

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Defendant's Exhibit (GM) No. 237

7300

Extract from minutes of meeting of the Executive Committee of General Motors Corporation duly held on the eighth day of August, 1930.

* * * * * *

Present:

Mr. Alfred P. Sloan, Jr., Chairman
Mr. Donaldson Brown,
Mr. Fred J. Fisher,
Mr. Wm. S. Knudsen,
Mr. John L. Pratt,

* * * * * *

MANUFACTURING OF FLORINE GAS

Mr. Pratt brought up the question of making a contract with the DuPont Company whereby we become joint owners with them of a company to be organized for the manufacture of certain compounds of fluorine which have been developed by our Research Laboratories. These compounds are particularly desirable for use in electric refrigeration.

On motion the Committee unanimously authorized Mr. Pratt to make the proposed contract with the DuPont Company.

* * * * * *

A true copy.

/S/ George A. Brooks
Secretary

5098

Defendant's Exhibit (GM) No. 238

7301

Extract from minutes of meeting of the Finance Committee of General Motors Corporation duly held on the 8th day of September, 1930.

* * * * * *

PRESENT: Messrs. Donaldson Brown
G. F. Baker, Jr.
W. S. Carpenter, Jr.
H. F. duPont
Irenee duPont
F. J. Fisher
J. S. Morgan, Jr.
C. S. Mott
Seward Prosser
J. J. Raskob
A. P. Sloan, Jr.
George Whitney

Messrs. A. Bradley and J. L. Pratt were also present.

* * * * * *

KINETIC COMPANY - MANUFACTURE OF CHEMICALS

A report was received from the Executive Committee dated September 5, 1930 (#2971) enclosing a copy of a contract that has been executed between General Motors Corporation and E. I. duPont deNemours & Company of Wilmington, Delaware, covering the organization of a new company known as Kinetic Chemicals, Inc., with a total capitalization of 20,000 shares of stock of a par value of $100. per share.

5099

Under the terms of this contract the duPont Company agrees to subscribe to 51% of the total capitalization of Kinetic Chemicals, Inc., and the General Motors Corporation agrees to subscribe to 49% of such capitalization, payments to be made by the subscribers against their subscriptions as and when called to meet the requirements of the business.

The purpose of the organization of Kinetic Chemicals, Inc. is primarily to engage in the manufacture and sale of certain chemicals developed in the laboratories of General Motors and subsidiaries to be used as a refrigerant in Frigidaires.

It was felt that because of the experience of the du Pont Company in the chemical field that it is to the interest of General Motors Corporation to arrange with the duPont Company for the commercial development and production of these chemicals rather than for us to undertake the organization of the necessary personnel, technical staff, etc. for their production; and in order to give the duPont Company an incentive for the most efficient development of these chemicals it was considered mutually advantageous that the duPont Company should have the right to subscribe to 51% of the stock of the Kinetic Chemicals, Inc. Under this agreement a royalty will be paid to General Motors for the right to use the inventions transferred to Kinetic Chemicals, Inc., as covered more fully in the agreement.

Upon motion, duly made, seconded and unanimously adopted, the report from the Executive Committee was accepted, the plan for the organization of Kinetic Chemicals,

Inc. approved, and the proper officers of this Corporation duly authorized to subscribe to 49% of the total capitalization of said Company.

* * * * * *

A true copy.

/S/ George A. Brooks
Secretary

7304

August 25, 1931

Mr. J. L. Pratt, Vice-President,
General Motors Corporation,
Broadway at 57th Street,
New York, N. Y.

My dear John:

I wish to acknowledge your letters of August 18th respecting the research work being carried on for us by the Underwriters' Laboratory and your suggestions regarding sales activities.

It is planned that Messrs. C. D. Porch and H. L. Miner will meet Messrs. Smithson and Williams of the Frigidaire Corporation and together with Dr. Kehoe will hold a conference with the enginners and chemists of the Underwriters' Laboratories in Chicago as soon as a date can be arranged convenient to all parties concerned. At this conference it is expected that that one of the Vice-Presidents of the Underwriters will be present.

The conference has not been held previously because Dr. Kehoe has been abroad and Mr. Buckolls, Chief Chemist of the Underwriters' Laboratories has been on his vacation. At this meeting there will be discussed results obtained by the Underwriters' Laboratories and the people representing us will endeavor to have the report written in language which will not reflect discredit on Kinetic No. 12 when subjected to high temperatures. We will be very glad to send you the account of this meeting and the report of the Underwriters' Laboratories as soon as issued.

Regarding our sales activities, would say that Mr. Rhodes and Mr. R. J. Thompson, Service Engineer of the Frigidaire Corporation, who is being transferred to us this week, called on Mr. Louis Ruthenburg of Copeland Products Inc. on July 28, 1931 and Mr. G. W. Mason of the Kelvinator Corporation on July 29, 1931 and discussed with these gentlemen and their engineers both technical and sales matters. Both Messrs. Ruthenburg and Mason advise that they will adopt Kinetic No. 12 for use in their equipment. However, neither of them are definite as to the time when they will purchase the refrigerant. Copeland Products Inc. have purchased this week an amount of 1450 pounds of Kinetic No. 12 to be used in several hundred machines which will be put out under the observation of company owned distributors. Kelvinator Corporation have a number of machines in service and seem perfectly satisfied with the refrigerant in all respects. We believe that the one matter which deters both of these concerns from making an immediate decision is the disturbance in New York City, which is being created by the Code Committee (Edwards Committee) of the American Standards Association. This disturbance is probably aided and abetted by Colonel Frank Smith of Serval Inc. who apparently has determined to continue to use methyl chloride if possible but if Kinetic No. 12 is given a

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clean bill of health will switch over and use it.

Messrs. Rhodes and Thompson also called on the Norge Corporation on July 29, 1931 and this concern is mildly interested at the present time in Kinetic No. 12. Rhodes has called on Colonel Smith twice, the last visit being on August 13, 1931. All three Presidents of these corporations are over-friendly to Kinetic Chemicals, Inc., Du Pont and General Motors. They treat our representatives in a most cordial way and impress on them that they are very friendly to us and would like to see one refrigerant adopted as standard throughout the industry. We think that Smith is behind this high temperature disturbance and that Ruthenburg and Mason are in the position of standing on the side lines awaiting the outcome. Of the three men Ruthenburg is the most sincere in his attitude toward us.

It is in our mind that the General Electric Company will be the last of the larger concerns to adopt Kinetic No. 12. We have not quoted prices to them because they have not asked for a quotation. Mr. Rhodes has received a communication from Mr. Dantsizen, the Works Chemist at Schenectady asking us if we are now prepared to sell Kinetic No. 12 for less than 25¢ per pound. Our reply has of course been in the negative. However, we know that quite a good deal of discussion was given to Kinetic No. 12 during a meeting of the Refrigerator Department men at the Island last week. Mr. Chester Lichtenburg who heads up the program at Fort Wayne left this meeting and asked Mr. Dorwirth of the Philadelphia office to immediately get in touch with Mr. Rhodes respecting a rumor that Kinetic No. 12 had been withdrawn from the market. This rumor came to him from their distributor in Indianapolis, Indiana and is the result of the stories being spread by two men in the Middle West at the present time. One of these men, Bright, is said to represent the Chicago District Ice Association and the other, Fremont Wilson's connection is kept a secret.

We therefore believe it advisable to get this high temperature matter out of the way before the middle of September and then we will resume active sales solicitation by visit to the concerns which have been agreed upon as our logical customers. At the present time we do not think that pressure should be put on any of them including the General Electric Company to make an immediate decision. We are fearful that if pressure is brought, one or another of these companies will commit themselves not to use Kinetic No. 12 and we hope to keep them from making such a decision and then sticking to it as a matter of principle.

In the field of commercial refrigeration, would advise that the Carrier Engineering Corporation sent last week two of their engineers to Dayton to discuss technical matters with Mr. Newell and others of the Frigidaire Corporation. Last week we submitted Mr. Lyle a contract proposal. We are endeavoring to have the Treasury architects specify Kinetic No. 12 as a refrigerant to be used with air conditioning equipment which they are planning for a number of Government office buildings in Washington. The general interest in the product is great. Samples have been secured by fifteen or twenty of the smaller concerns who are submitting it to test. The General Electric Company

are ordering samples for Schenectady or Fort Wayne every week or two. I think when the matter develops a little further they will doubtlessly inquire of us for a price. In the meantime, all price information they may have is gotten in a round-about manner.

We will keep you posted as to developments.

Very truly yours,

KINETIC CHEMICALS, INC.,

E. G. ROBINSON
PRESIDENT

EGR:M

NOTE: Stamp in upper right hand corner of page 1 reads "J. L. Pratt answered—noted" with 8/27 written therein.

Defendant's Exhibit (GM) No. 240

7307

August 28, 1931

Mr. E. G. Robinson, President,
Kinetic Chemicals, Inc.,
Wilmington, Delaware.

Dear Robbie:

Please accept my thanks for your letter of August 27th, bringing me up to date on Kinetic Chemicals.

I shall await with interest the result of the conference which it is proposed to hold with the Underwriters' Laboratories in Chicago.

I think your philosophy of not offending any of your prospective customers is no doubt the best method of working with the parties concerned. However, when and if we get a clean bill of health from the Underwriters' Laboratories in Chicago I would be inclined to put a little pressure on G.E., as it has been my experience that fair treatment to these people is interpreted as a rule by them as a degree of weakness, and I don't think we should get ourselves in that position in their mind.

Very truly yours,

Vice President

JLP:V

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Defendant's Exhibit (GM) No. 241

7308

EXCERPTS FROM AN ADDRESS BY C. F. KETTERING,

"Consumption—the Automotive Industry," the complete transcript of which is printed in Bulletin No. 132, American Petroleum Institute, December 10, 1920

The Problem from the Automotive Side.

We have it on good authority that if we took 10 per cent. of the heavier ends out of our fuel today we could run even more economically than we do now, but we have got to reverse this very interesting fact, that as we lower the compression of an engine we lower the efficiency of it.

In order to get to you this problem as we see it, here is what happens: If we try to burn the present-day fuel which is sold at the average filling station in a high compression engine, we will say, like an airplane engine, we cannot do it. We cannot fly. It is almost impossible to get off the ground if you have to fill your machine with

ordinary automobile gas. The reason is that we get that awful knocking in the motor. Most people call it a carbon knock. I will tell you what it is a little later on. We find that with a high-compression engine, like an airplane engine, where the compression is 125 pounds to the square inch at about three-quarters or two-thirds of the maximum power, if you open the throttle to get two-thirds or three-quarters of the maximum power those explosions get so intense that they just cave the piston heads in.

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That, gentlemen, is the real fuel problem. We cannot raise the compression of our engines because of the fact that if we do, when you throw the throttle wide open, when the motor gets a little bit dirty, the motor pounds so hard that it will fracture the porcelains in the spark plugs, break down the bearings, and do all sorts of things. It will wreck the engine.

When we lower it to the point where we can throw the throttle wide open and still not subject the engine to undue strains, we work but very little of the time at that demand. In other words, the per cent. of total time that an automobile engine is asked for full power is very small, but you have got to drive that engine doing twenty or thirty miles an hour when the throttle is very nearly closed, when the compression is dropped down to maybe a third or a quarter of what its maximum is, and we burn 90 per cent. of all of our fuel down there at that very inefficient point.

If we can put the maximum compression up to a point of, say 120 or 130 or even 140 pounds and not have it knock, not have it break the engine up, then we can practically double the efficiency of our engines around twenty to thirty miles an hour. If we came to you today and said, "Here is a proposition whereby we can increase the petroleum production from one-third to one-half of what it is now so far as the automobile industry is concerned," I am sure that we could find some fellows who would invest in oil stock right away. Yet it is possible, by co-operation between this organization and the automotive industry to increase the efficiency of our machines from 33 1/3 to 50 per cent.

Why do we not do that? Why can we not do it?

How to Keep Down Detonation.

I guess I can illustrate this without a blackboard: Let us imagine that the edge of this book is a vertical line. We will suppose that we call the top of the book here 76 gravity fuel—it has got a line running across here—and then, succeeding parallel lines down here representing lower gravity fuel. This is 76, and I will condense the curve, because what we are using now is down here. I will put it up here. Let us imagine that this black line here is what we are now using.

When we take a full charge into a cylinder, or when we try to charge that cylinder at the present time, we have two things which are working against each other. In the first place, we are required to add more heat to vaporize that fuel; and from the very fact that we have to raise the temperature of the mixture in order to get volatilization for distribution purposes only, we reach another circumstance which I will now explain.

Each one of these parallel lines across here, representing a gravity, carries with it another perfectly positive constant which is a function of two things, the compression to which that charge is subjected and the temperature to which it is subjected upon burning. In other words, each fuel line across here carries with it another distinct, perfectly definite thing which is a product of compression and temperature.

If we ignite the fuel charge which we have in this cylinder, in burning it burns up here both in compression and temperature, does its work, goes down, and is exhausted out. If in that operation we do not pass the critical point for that given fuel, the engine runs very

nicely. If we do pass it for just a little bit, the engine does not perform normally at all. The minute we go above this black line we do not get a nice come-over and back down, but we get a detonation here which goes away up like that back down, just a very sharp point up and back and then on down; and it is not infrequent to have this point of detonation above that line equal to the total explosion pressure of the engine, or sometimes very much greater.

That is the basic fuel problem which we are facing in the automotive industry—how to keep down that detonation which happens when we go up past the critical point for any given fuel.

Varying Characteristics of Fuel.

Each particular fuel has its characteristics. The paraffines have theirs. The citrate compounds, like you get out in California, have theirs. You know, there is a wonderful illustration. Out in California there have been more kerosene carbureters invented than in any other place in the world, because they take that 27-plus fuel oil, as they call it out there, that black oil, and put it in a carbureter, and it runs wonderfully out there. Then they bring it down here, and we put some of our paraffine kerosene in it, and the engine just hammers its head off. The fellow things his carbureter is out of adjustment, but I want to explain to you how little this is understood.

A motor car builder in Detroit built a new motor car last year, an experimental car, and sent his boys across the continent with it, and in going across the continent the engine just pounded its head off. When they got out to Denver they wired back that the machine was in ter-

rible shape, that it would never do; it had just pounded, pounded, pounded. So he hopped on a train and met them in California, and they could not get it to pound out there at all, so he said: "You fellows have been drinking. That is all there is to it." So he got on the train and came back, and the boys drove the car back across the country, and after they got it past the Rocky Mountains, coming back, the engine just pounded its head off again. They burned out bearings, and they had a devil of a time getting home. I am telling you that because I want you to appreciate that the automotive engineer today does not understand the fact that there are different characteristics in different kinds of fuel.

If you can raise the compression of your motors, you can do a lot of things. You can increase the economy; you can do things to keep out crank-case dilution; you can do things for distribution; you can do a lot of things that we cannot do now. But it is such a big task because of the fact that we cannot do the things that we want to do in the automobile engine until we get the proper fuel work done, and we have difficulty in getting the fuel work done until we get the engine to do it. So we have to carry this movement on together as a co-ordination between the American Petroleum Institute, the automotive industry and the chemical societies, because it is possible, and we know enough today in a good many ways to help this situation out.

Defendant's Exhibit (GM) No. 242

7313

Chicago, April 16, 1919.

Mr. E. M. Clark,
26 Broadway,
New York, N. Y.

Dear Mr. Clark:

For some time automobile engineers have been discussing the investigations which are being carried on in the laboratory of the Delco Company, at Dayton, Ohio, on the performance of various motor fuels. As Mr. Wiles and I told you some time ago, it was reported that the Delco Company had discovered that the so-called "pre-ignition knock" in gas engines was in reality a detonation which might occur some time after the piston had actually passed top dead center; in other words, that it was not pre-ignition at all.

In the April number of the Journal of the Society of Automotive Engineers which just reached me yesterday, I find a paper by Kettering, President of the Delco Company, giving the high spots of this work which are briefly as follows:

(1) The combustion of gasoline in the engine cylinder is, in general, not a straight reaction with oxygen giving carbon dioxide and water, but is a very complicated reaction. Probably part of the fuel burns in this way as soon as a spark occurs. The rise in temperature and pressure resulting from this partial combustion, causes the remainder of the fuel to decompose or crack with the formation of a wide variety of hydrocarbons. Spectroscope analysis shows that, at least, some acetylene is formed by this decomposition which precedes the actual combustion of the bulk of the fuel.

(2) The character of the decomposition or cracked prod-

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ucts formed in the engine cylinder depends upon the maximum temperature reached. The primary effect of carbon in the cylinder is not to cause pre-ignition but to merely insulate the cylinder walls, thus cutting down the heat loss from the charge through these walls and causing the higher temperature with the resultant formation of preliminary decomposition products which are capable of detonating. It is, of course, well known that acetylene will detonate in the absence of oxygen; in other words, without burning at all, and it may be that many other products of the decomposition of higher hydrocarbons are capable of detonating.

(3) The formation of these unstable preliminary decomposition products may be prevented by adding to the fuel some constituent which will dissociate endo-thermically, that is, with the absorption of heat, during combustion, and thereby limit the rise of temperature. Kettering states that the Delco Company has found that 2 to 5% of ethyl iodide will absolutely stop pre-ignition or knocking with kerosene, it being shown the ethyl iodide dissociates with the absorption of a quantity of heat sufficient to hold the temperature of the mixture below the point at which the detonating compounds are generated.

(4) Cyclo-hexane (C_6H_{12}) seems to be one hydrocarbon fuel which can be burned with compression pressures up to 200 pounds without the formation of detonating decomposition products. Benzol also appears to work in this way, but is objectionable in that it fouls spark plugs badly.

(5) A mixture of cyclo-hexane and benzol (80 parts of the former and 20 parts of the latter) permits compression pressures up to 200 pounds without knocking and it does not foul the plugs and has the further advantage that it

remains liquid down to —40°F. This is a most remarkable example of a eutectic phenomenon, since both of the constituents of this mixture in their pure state will solidify at approximately +40°F.

—2—

I am bringing this to your attention at the earliest moment because I think that unless the fuel producers themselves get into this work of investigating the properties of their fuels, there is a good chance that they may have to pay tribute to others. I believe that a gasoline which, by the addition of a few per cent of some agent, such as the ethyliodide found by Kettering would not knock in a dirty motor, would easily bring five cents per gallon above the market and that there would be such an insistent demand for it that any oil producer who had exclusive rights could absolutely dominate the entire motor-fuel market.

I think you should immediately consider the advisability of getting in touch with the Delco Company with a view to determining whether they have any broad patent protection on their discoveries, or can obtain such protection.

I also believe that these developments indicate the supreme importance of proceeding with the establishment of an experimental engineering dpartment capable of attaching this problem.

It is quite likely that this matter has already come to the attention of your Company for I do not see how any work which apparently has such an important bearing upon your fuel production and marketing should have escaped attention so long. On the chance that you might not be familiar with these latest developments, however, I am giving you a resume of them. I am particularly anxious that you

appreciate the possibility that the Delco Company might obtain patents for its work on these lines which might be very embarrassing in the future, and the desirability of finding what the patent situation is as soon as possible.

Very truly yours,

(Signed) Frank A. Howard

Defendant's Exhibit (GM) No. 243 243

7317

August
Fifteenth
1919

Mr. John Marshall, Manager,
Miscellaneous Division,
Eastern Laboratory, Du Pont Co.,
Chester, Pa.

Dear Mr. Marshall:

I am inclosing herewith a list of the materials which have been tried in this laboratory for their effects in suppression or elimination of the kerosene knock.

It seems best for us at this laboratory to make a thorough study of the effects of the homologues of aniline on knocking fuels. The materials that we want to study immediately are as follows:

Aniline	Aniline	Aniline
Toluidine	Toluidine	Methyl aniline
Xylidine	Ethyl phenyl amine	Ethyl aniline
Amino-trimethlybenzene	Propyl phenyl amine	Propyl aniline
Amino-tetramethylbenzene	Butyl phenyl amine	Butyl aniline
Amino-pentamethylbenzene	Amyl phenyl amine	Amyl aniline

We shall appreciate it if you will send us as many of these materials as you may find it convenient to obtain. Any information you may be able to supply about the best methods of preparing such of the compounds as you do not have available, or intermediates for the preparation of such compounds, will be of very great assistance to us.

We are anxious to cooperate with you in every possible way.

Yours very truly,

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LIST OF MATERIALS TRIED FOR EFFECT ON KEROSENE KNOCK

(UNLESS OTHERWISE SPECIFIED, THE COMPRESSION WAS 50#.)

MATERIAL	EFFECT ON FUEL KNOCK
Iodine (free)	Stopped
Ethyl Iodide	Stopped
Methyl Iodide	Stopped
Hydrogen	Stopped
Copper (plating on head)	None
Nickel (plating on head)	None
Iodoform (very slightly sol.ker.)	Suppressed
Eucalyptol	None
Camphor	Suppressed slightly
Beechwood Creosote	Suppressed
Halowax (10%)	Reduced one-half
Halowax (25%)	Stopped
Merck's Cresol	Suppressed
Isoprene	Suppressed slightly
Chloroform	No effect
Terebene	Suppressed
Acetone (60%)	Preignition
Colloidal nickel	Decreased
Kerosene tested with $AlCl_3$	Slight Knock
Kerosene chlorinated	Severe Knock
Residue from Cracked Turpentine	Stopped Motor
Colloidal Mg	Stopped Motor
Ethylene Bromide	Power Reduced
Rosin	None

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MATERIAL	EFFECT ON KNOCK
Oleic Acid	None
Carbon Tetrachloride	Increased
Copper resinate	Increased
Potassium Iodide (solid)	Stopped
Sulphur (solid)	None
NaCl (solid)	None
$CuCO_3$ (solid)	None
Calomel (solid)	None
Mercuric Chloride	None
Mercurous Acetate (solid)	None
Ammonium Arsenite (solid)	None
Boric Acid (solid)	None
Copper Carbonate (solid)	None
Antimony (metal)	Slight Suppression
Arsenious Acid	None
Potassium Bichromate (solid)	None
Potassium Chromate (solid)	None
Potassium Ferrocyanide (solid)	None
Potassium Nitrate (solid)	None
Potassium Carbonate (solid)	None
Potassium Bromide (solid)	None
Potassium Iodide (solid)	Lessened
Sodium Benzoate (solid)	None
Liver of Antimony	Suppressed
Water	Stopped
Antimony Methyl	None

MATERIAL	EFFECT ON KNOCK
Zinc Ethyl	None
Bromine (5%)	None
Tartaric Acid	None
Copper Acetate	None

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MATERIAL	EFFECT ON KNOCK
Silver Nitrate	None
Aniline	Stopped
Ammonia (very slightly soluble)	No Appreciable effect
Toluidine	Stopped
Phosphorus	?
Benzidine	None
Orthonitrotoluene	Increase
Orthonitrophenol	Increase
Sulphanilic Acid	None
Diphenylamine	10% O. K.
Alpha Naphthylamine	Low solubility
Pyridine	N. G.
Ortho and Para Toluidine	O. K.
Methyl Cyanide	None
Benzonitrile	N. G.
Alpha and Beta Naphthol	None

Reagent	Concentration Solution	Result of Test (1) 75# Comp.	(2) 50# Comp.
Methyl aniline	5cc in 90cc	Good	Good
Dimethyl aniline	11%	Slight imp.	?
" "	5.5	No. eff.	Slight sup.
" "	2.75	No. eff.	" "
Paratoluidine	2g. — 90cc	Improved	Good
Orthotoluidine	5cc — 90cc	Good	
Diphenylamine	2g — 90cc	?	Improved
Acetanilide	2g — 90cc	No. eff.	Very slight sup.
Benzanilide	2g — 90cc	"	" " "
Alpha naphthylamine	2g — 90cc	"	" " "
Beta naphthylamine	2g — 90cc	"	" " "
Phenylene diamine	Saturated	"	" " "
Benzidine	2g — 90cc	"	No. imp.
HYDROXYLATED COMPOUNDS			
Ethyl alcohol	5cc — 95cc	"	No. eff.
Butyl alcohol	5cc — 85cc	"	" "
Amyl alcohol	5cc — 85cc	"	Slight
Phenol	1g —90cc	"	Some

Reagent	Concentration Solution	Result of Test (1) 75# Comp.	50# Comp.
Meta Cresol	5g — 90cc	"	Slight
Xylenol 1:3:4	5g — 90cc	"	"
Veratrol	5g — 90cc	No. eff.	Slight
Hydroquinone	2g — 90cc	"	No. eff.
Beta Naphthol	2g — 90cc	"	" "
Glycerol	5cc — 90cc	"	" "
Benzyl alcohol	10cc — 85cc	"	Slight
Diethyl methyl-carbinol	5cc — 85cc	"	"
CHLORO BROMO AND SODO BENZENE DERIVATIVES			
Monochlor benzene	10cc — 85cc	No. eff.	No. eff.
Mono brom benzene	10cc — 85cc	"	" "
Benzyl dichloride	5cc — 90cc	"	Sl. imp.
Ortho dichlor benzene	10g. — 87cc	"	No. eff.
Para dibrom benzene	2g. — 90cc	"	" "
Dimethyl dibrom benzene	5g. — 90cc	"	" "
Para-dichlor-benzene	2g. — 90cc	"	" "
BENZENE AND HOMOLOGNES			
Toluene	10cc — 85cc	"	Some imp.
Dimethyl benzene (ortho)	10cc — 85cc	"	" "
Dimethyl benzene (para)	10cc — 85cc	"	" "
Naphthalene	2g. — 90cc	"	No. eff.
Phenanthrene	2g. — 90cc	"	" "
Diphenyl	2g. — 90cc	"	" "
Phenyl toluene	2g. — 90cc	"	" "
Cyclohexane	10cc — 85cc	"	Some imp.
Ethyl benzene	10cc — 85cc	"	No. eff.
UNSATURATED PETROLEUM AND DERIVATIVES			
(1) Unsaturated (Cosden)	b.p. 60° — 206°	O. K.	O. K.
(2) Unsaturated (Cosden)	b.p. 206° — 246°	No eff.	No. eff.
Kerosene	20cc — (2) 20cc	" "	" "
Kerosene	70cc — (2) 20cc	" "	" "
Kerosene	20cc — (1) 20cc	" "	Some imp.
Kerosene	70cc — (1) 20cc	" "	" "
ESTERS			
Methyl acetate	10cc — 85cc	" "	No. eff.
Amyl acetate	10cc — 85cc	Marked imp.	Increase
$CH_3COCH_2COOC_2H_5$	10cc — 85cc	No eff.	

NOTE: "Fuel 1919 Kettering file" is handwritten in upper left hand corner of page 1. "121" is handwritten on last page under $CH_3COCH_2COOC_2H_5$.

Defendant's Exhibit (GM) No. 244

7322

December 23rd, 1919

Mr. W. C. Durant,
1764 Broadway,
New York City.

Attention Mr. Murphy.

Re: Dayton Metal Products Company
Dayton Wright Airplane Company.

Dear Sir:—

The transaction for the purchase of 60,000 shares of the Dayton Metal Products Company was consummated at Dayton on December 19th, 1919. At that time there were delivered to Harry E. Talbott, representing himself and associates, common and debenture shares of General Motors Corporation stock as per list attached.

There was received certificates of stock of Dayton Metal Products Company in the number of 60,000 shares, issued to General Motors Corporation. This transaction was closed in connection with the closing of the purchase of the real estate and personal property of the Dayton Wright Airplane Company, for which there was issued 10,960 shares of the six per cent. debenture stock of General Motors Corporation. As a part of the consideration of the acquisition of the stock of Dayton Metal Products Company there was turned back to Talbott and associates 10,000 shares of the common stock of the Dayton Securities Company, which was in the treasury of the Dayton Metal Products Company.

In connection with the closing of this transaction a careful examination was made of the real estate titles of the Dayton Wright Airplane Company and also of the Dayton

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Metal Products Company. Complete abstracts of all these real estate titles have been taken or are in the process of completion and will be in hand in a few days. In this connection there has been found various minor defects and a defect of considerable importance in connection with the Morraine plant. In order to meet this situation and protect General Motors Corporation against any loss which may arise by reason of these defects, we have taken an indemnity bond from Messrs. H. E. Talbott, Sr., H. E. Talbott, Jr., and C. F. Kettering, the principal stockholders of Dayton Metal Products Company.

We have had drafted deeds of the real property and also proposed bill of sale, including assignment of patents of

the property of Dayton Metal Products Company for use in transferring its assets to General Motors Corporation in order to effect its merger with the latter Company.

The 60,000 shares of Dayton Metal Products Company with the exception of five shares required to qualify the directors in Ohio, have been sent to Mr. Prensky. The five qualifying shares are enclosed herewith; as is also a proxy of 5,995 shares, both of which are to be executed by General Motors Corporation for the purpose of electing a new board of directors who will effect the dissolution of Dayton Metal Products Company.

I shall later enclose to Mr. Prensky the abstracts of title, quit claim deeds, affidavits, indemnity and other agreements taken in connection with the closing of these transactions, some of these papers not being completed at the present time.

In this connection we have also taken a lease of the Ad-

ministration Building and Experimental Plant at Ludlow and First Streets, Dayton, Ohio, at a rental of $3,484.56 per year, plus taxes and assessments, premiums on fire insurance policies, etc. This is for one year with an option for a further period of one or two years, as we may elect.

Will you please see to it that the stock and proxy enclosed are executed as soon as possible by General Motors Corporation, and returned to us, taking care that the corporate seal is affixed.

Very truly yours,

Encl.
EHK/GB

NOTE: "Copy" runs across both pages. "E. H. KELLY, G. M. Legal Dept." is handwritten beneath initials EHK/GB on page 2.

Defendant's Exhibit (GM) No. 245

7325

GENERAL MOTORS CORPORATION
Dayton-Wright Division
Dayton, Ohio

April 8, 1920

Mr. C. F. Kettering,
Dayton, Ohio.

Dear Mr. Kettering:

MARCH REPORT FOR THE RESEARCH DIVISION

PERSONNEL

Plant Three:	Engineering Division	11
	Dynamics Division	22
	Experimental Production Division	43
	Overhead	5
	Patent Department	4
	Special Engineering	4
	Stores & Accounting	10
	Employees at Plant Three, based upon week ending April 3	99
Research:	Special Research Division (Fuel)	8
	Chemistry & Metallurgy Control Div.	11
	Overhead	9
	Employees at Research, based upon week ending April 3	28

5123

SPECIAL RESEARCH DIVISION

Sheet Steel Committee Investigation

The sheet steel committee work is about completed. One additional suggestion has been made, not referred to in previous reports: namely, that the amount of scale left after annealing by a deoxidizing process be removed by devising a suitable sand-blasting machine that will operate on both sides of the sheet at the same time; this machine to be automatic and include water-washing and drying operations to remove particles of sand imbedded in the steel itself. This treatment would be followed by the customary cold-rolling to give the finish. There would be no pickling operations involved in this process. The pickling operation, with its disagreeable odors and danger inherent in acids, seems to be one of the principal reasons why the production of the sheet metals is curtailed considerably. This suggested procedure would not give immediate results but is a fairly practical process for future development.

In the meantime, we will probably augment the supply by using single-pickle sheets and deoxidized sheets. Mr. Williams and Mr. Mougey are in Detroit this week, following through the final lot of cars, with the finishes indicated above, at the Chevrolet Plant.

Fuel Work

The rise in price of gasoline has made some of our fuel work look considerably better from the commercial stand-

point. Our proposed procedure now is to keep motors of different varieties and types operating on a refinery product that will increase the available fuel supply at least 100 per cent. We are counting upon taking a crude and distilling off 50 per cent. of its volume and calling this a motor fuel of the immediate future. This fuel will include the light materials, gasoline, kerosene and the early portions of the fuel-oil cuts. By adding the anti-knock material to this distillate, we count upon being able to increase the compression of the motors some twenty or thirty pounds. This increased compression will help us burn fairly clean and, at the same time, will help the vaporization. Carburetion and distribution problems will have to be solved, also.

This is such an enormous program that it seems advisable to permit the duPont organization to handle the production problems that pertain to the anti-knock material. Furthermore, it would be desirable to have a three-cornered connection, whereby we could have one of the national independent fuel companies also affiliated on the problem at hand.

The new layout at Plant One will give us a large-sized motor room and we expect to have both single and multi-cylinder motors operating on a great many varieties of fuel.

Respectfully submitted,

F. O. CLEMENTS,
Director of Research

FOC-G

Defendant's Exhibit (GM) No. 246

No. 244

7328

Letterhead of
E. I. DU PONT DE NEMOURS & COMPANY
INCORPORATED
WILMINGTON, DELAWARE

EXECUTIVE OFFICES

November 19, 1921.

Mr. C. F. Kettering, President,
General Motors Research Corp.,
Dayton, Ohio.

My dear Mr. Kettering:

I have yours November 5th in regard to agreement between du Pont and General Motors. It appears to me that we are talking about different things. My principal interest is in seeing a general agreement whereby any kind of experimental chemical work can be undertaken by du Pont Company for General Motors without having to make up a special agreement on each subject. That was the object of the drafted agreement sent you a year ago and of which I sent a copy to Mr. P. S. du Pont. I hope that something will come of this, but recently have not seen any strong indication of anything definite being done.

You, I believe, are talking about the agreement with respect to work on motor fuel, and I agree that good progress is being made on this, but even if that agreement is

5126

7329 drawn up and executed, it leaves the general agreement just where it was before.

Yours very truly,

L du Pont
VICE-PRESIDENT.

LduP/MD

NOTE: "C. F. K." and "21 C. F. K." are stamped at top of page. Italics indicate handwriting.

Defendant's Exhibit (GM) No. 246A 7330

Patented Dec. 30, 1930 1,787,419

UNITED STATES PATENT OFFICE

THOMAS MIDGLEY, JR., OF DAYTON, OHIO, ASSIGNOR, BY MESNE ASSIGNMENTS, TO GENERAL MOTORS CORPORATION, OF DETROIT, MICHIGAN, A CORPORATION OF DELAWARE.

METHOD FOR USING MOTOR FUELS

No Drawing. Original application filed April 15, 1922, Serial No. 553,270. Patent No. 1,573,846, dated February 23, 1926. Divided and this application filed January 22, 1926. Serial No. 82,133.

This invention relates to fuels, such, for example, as kerosene and gasoline, employed in the operation of internal-combustion engines and to the art of burning the fuels in an engine. The present tendency is to produce lower grades of gasoline in order to obtain a sufficient output for the increasing demand for motor fuels and to reduce the compressions of the engines so that these lower grades of fuel may be used without knocking. As the lowering of engine compression reduces the efficiency of the engine, a still greater output of fuel is required to meet the increase in fuel required to operate larger and less efficient engines. The principal objects of the present invention are to overcome these difficulties and to provide a means for using either low or high grades of motor fuel more efficiently and so reduce the quantity of fuel used.

The present application is a division of my co-pending application Serial No. 553,270, filed April 15, 1922; now Patent No. 1,573,846, Feb. 23, 1926.

75 pounds are used generally, and internal-combustion engines for house lighting systems, trucks, tractors, and automobiles are designed to operate on these kinds of fuel.

I have found that the critical compression pressure of a fuel of the type mentioned above is increased by incorporating therewith any one of a large number of compounds containing metallic elements i. e., compounded metallic elements.

By way of example, I may use a fuel consisting by volume of ¼ of one percent of tetra ethyl lead and 99¾ per cent of gasoline having a normal "critical compression pressure" of about 75 pounds. The tetra ethyl lead dissolves in the gasoline forming a fuel having a "critical compression pressure" of about 160 pounds. The presence of the lead compound changes the gasoline from a low compression fuel to a higher compression fuel i. e. increases its "critical compression pressure". This gasoline may be used in an engine having a compression pressure of about 160 pounds with a smaller fuel con-

or major constituent of the high compression fuel and using other compounded metallic elements to increase critical compression pressure. The fuels used include gasoline and other hydrocarbon fuels containing hydrocarbons which may be obtained from an asphalt, naphthene, paraffine base crude or mixtures thereof.

Other lead compounds which have been used successfully are the phenyl compounds and other alkyl compounds besides tetra ethyl lead. These include the ethyl, isopropyl and method compounds. Methods of manufacturing lead compounds are described on page 134 et. seq., Vol. 111 of Watts' Dictionary of Chemistry as revised by Morley and Muir and published by Longmans, Green and Co., London, England.

Other metallic compounds may be used to suppress a knock in a motor. These include compounds of selenium, tellurium, tin, arsenic and antimony. The phenyl and alkyl compounds of these metals have been successfully used where the stable compounds are obtainable. The alkyl metal compounds usually have a greater knock suppressing value than the corresponding phenyl compounds.

Dissolving a knock suppressing substance in a hydrocarbon fuel has been found the most satisfactory method of changing the critical compression pressure of the fuel, and for this reason the organic compounds have been employed to a greater extent than other compounds in suppressing knocks, however, I do not limit my invention to organic compounds nor to the oil soluble compounds.

The value of metallic compounds in changing the critical compression pressure depends upon the metal used, the composition of the volatile and less soluble in the fuel than the tetra ethyl lead. The tri-ethyl lead hydroxide is almost as powerful a knock suppresser as the tetra ethyl lead.

The value of a compounded metallic element as a knock suppresser appears also to be a period function of the atomic number and, in general, with similar elements increases with increasing atomic weight. To illustrate this function, I take the ethyl compounds of the metals in the right hand column of the 4th, 5th, and 6th groups, wherever stable ethyl compounds are obtainable. As the ethyl compound of antimony is unstable in the air at room temperature, I employ the phenyl compound of antimony. These compounds increase in knock suppressing value in group 4 in the order tin, lead; in group 5 in the order arsenic, antimony; and in group 6 in the order selenium, tellurium. Taking group 4 as an example, 1% by volume of the ethyl compounds of the metals in gasoline or kerosene give the following increases in critical compression pressure: tin, 15 pounds; lead at the rate of 340 pounds when employed in relatively small quantities.

While I have mentioned more particularly the use of phenyl and alkyl compounds of certain metals for increasing the critical compression pressure of kerosene and gasoline, my invention is not limited wholly to the use of these compounds, nor to compounds of these metals, and the compounded metallic elements may be employed with the heavier hydrocarbon or other fuels.

Further, while the specific examples herein given constitute preferred forms of embodiment of the invention, it is to be understood that other forms might be adopted.

Defendant's Exhibit (GM) No. 247

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POSTAL TELEGRAPH - COMMERCIAL CABLES

TELEGRAM

Aug. 23 1922

Telegram

Doctor E. K. Bolton
Chemical Section
E. I. Du Pont de Nemours and Co.
Wilmington, Delaware

When may we expect shipment of antiknock material stop need it for races stop please wire at once

Midgley

(5130)

E I du Pont

Defendant's Exhibit (GM) No. 248

7:333

Form 129 G.M.R.Corp.-2000-5-3-22

RECEIVED

General Motors Research Corporation

PRIVATE WIRE TELEGRAM

DUPLICATE

CHUF 10

PENNSGROVE NJ 1015A AUG 24 1922

MIDGLEY

G M RES CORPN

SHIPPING YOU SEVENTY POUNDS ANTIKNOCK FIVE HUNDRED BY EXPRESS TODAY

W S HARRINGTON

1015A

[5131]

Defendant's Exhibit (GM) No. 249

7334

RECEIVED | Form 120 G.M.R.Corp.-2000-5-1-22 General Motors Research Corporation PRIVATE WIRE TELEGRAM | ORIGINAL

16WU F 18

PENNSGROVE NJ 217P AUG 25 1922

MIDGLEY

G M RS CORPN

SHIPPED FORTY SIX POUNDS ANTIKNOCK FIVE HUNDRED TODAY BY EXPRESS

W F HARRINGTON

254P

5132

Defendant's Exhibit (GM) No. 250

7335

Quarantine, S.I., N. Y.

November 13, 1922.

Mr. Thomas Midgley, Jr.,
General Motors Corporation,
Dayton, Ohio.

My dear Mr. Midgley: -

The enclosed is my attempt at carrying out my orders from Washington. I am enclosing it to you in case you have time to look it over and correct errors, etc., and, particularly, in case you can think of anything to add that might be of interest to an amateur like myself. I should be very glad if the Bureau would detail me to look into the toxicology of the subject, but am hoping for no such luck -- someone else will get any such detail.

I hope that nothing will prevent your continued success in the solution of this problem, and thank you for your courtesy and assistance in carrying out my orders.

Very truly yours,

Norman Roberts.

5133

lower grades of fuel may be used without knocking. As the lowering of engine compression reduces the efficiency of the engine, a still greater output of fuel is required to meet the increase in fuel required to operate larger and less efficient engines. The principal objects of the present invention are to overcome these difficulties and to provide a means for using either low or high grades of motor fuel more efficiently and so reduce the quantity of fuel used.

The present application is a division of my co-pending application Serial No. 553,270, filed April 15, 1922; now Patent No. 1,573,846, Feb. 23, 1926.

Kerosene, gasoline and the heavier hydrocarbons have the characteristic that, when a combustible gaseous mixture containing one of these fuels and air is burned in an internal combustion engine while subjected to a relatively high pressure, a fuel knock is produced, the engine heats rapidly, the efficiency of the engine is reduced, and, if the initial pressure is very high, engine parts may be injured. The highest pressure at which a mixture may be burned in a cylinder without producing a fuel knock varies with the different fuels and, to some extent, with the temperature, position of spark plugs and other conditions within the engine. This pressure I term the "critical compression pressure" of the fuel.

The average critical compression pressure of kerosene is about 50 pounds, of the poorer grades of gasoline about 75 pounds and of the better grades of gasoline about 125 pounds. The latter grade of gasoline is produced in limited quantities and is not available universally to the consumer. The commoner grades of fuel, such as kerosene and gasoline, having critical compression pressures below metallic elements.

By way of example, I may use a fuel consisting by volume of ¼ of one percent of tetra ethyl lead and 99¾ per cent of gasoline having a normal "critical compression pressure" of about 75 pounds. The tetra ethyl lead dissolves in the gasoline forming a fuel having a "critical compression pressure" of about 160 pounds. The presence of the lead compound changes the gasoline from a low compression fuel to a higher compression fuel i. e. increases its "critical compression pressure". This gasoline may be used in an engine having a compression pressure of about 160 pounds with a smaller fuel consumption for obtaining a given amount of work than is required to operate an engine having a compression pressure of 75 pounds on the untreated gasoline. Experiments with automobiles have shown that if the engine compression is increased to 160 pounds, a treated fuel being used to run the engine and the gear ratio between the engine and the rear axle is reduced, the mileage obtained from a gallon of gasoline is substantially twice that obtained when running the engine at 75 pounds compression on the untreated or low compression fuel.

For some commercial purposes it will probably be sufficient to use but one part of tetra ethyl lead in 2000 parts of gasoline. This mixture may be used in a truck motor to avoid the knock generally produced when climbing hills at low speed with open throttle. Relatively small proportional quantities of the lead compound are required to increase the critical compression pressure of "aviation" gasoline from 125 pounds to 160 pounds or more.

The fuel mixture or combination may also be varied by using other fuels as the fuel base

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ally have a greater knock suppressing value than the corresponding phenyl compounds.

Dissolving a knock suppressing substance in a hydrocarbon fuel has been found the most satisfactory method of changing the critical compression pressure of the fuel, and for this reason the organic compounds have been employed to a greater extent than other compounds in suppressing knocks, however, I do not limit my invention to organic compounds nor to the oil soluble compounds.

The value of metallic compounds in changing the critical compression pressure depends upon the metal used, the composition of the compounds, its stability and volatility. Up to the point of complete vaporization the anti-knock value depends in part on the percentage of the compound vaporized under engine conditions. Where the nature of the compound changes before ignition of the fuel, combustion of the fuel takes place in the presence of the new compound and the anti-knock value depends on the nature of the new compound instead of the compound added to the fuel.

If a radical is attached to the metal in the compound in such a manner that the resulting compound is oil soluble and volatile, a high anti-knock value for that metal is obtained. As the compound departs from these conditions either in the kind of radical employed or the number of radicals of a certain kind in the compound, the anti-knock value will generally be reduced. Examples of compounds in which the anti-knock value, as based on these conditions, becomes negligible are lead oleate and lead acetate. If, in the formula for tetra-ethyl lead, an OH radical is substituted for an ethyl radical, the resulting compound (tri-ethyl lead hydroxide) is less in relatively small quantities.

While I have mentioned more particularly the use of phenyl and alkyl compounds of certain metals for increasing the critical compression pressure of kerosene and gasoline, my invention is not limited wholly to the use of these compounds, nor to compounds of these metals, and the compounded metallic elements may be employed with the heavier hydrocarbon or other fuels.

Further, while the specific examples herein given constitute preferred forms of embodiment of the invention, it is to be understood that other forms might be adopted, without departing from the scope of the claims which follow.

I claim:

1. A method of utilizing a low compression motor fuel which comprises forming a combustible mixture of the fuel and air, and burning the mixture under a relatively high compression in the presence of vapors of a compounded metallic element.

2. A method as defined in claim 1, in which the gaseous low compression fuel is burned in the presence of a vaporized alkyl compound of a metal.

3. A method as defined in claim 1, in which the gaseous low compression fuel is burned in the presence of a gaseous ethyl compound of a metal.

In testimony whereof I hereto affix my signature.

THOMAS MIDGLEY, Jr.

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7336

November 13, 1922.

Surgeon General, U.S. Public Health Service,
Washington, D.C.

Sir: (Through Chief Medical Officer, Ellis Island, N.Y.)

I have the honor to report that I have accomplished the purpose of the following Bureau telegram to the Chief Medical Officer:

DIRECT SURGEON NORMAN ROBERTS ATTEND MEETING AMERICAN CHEMICAL SOCIETY RUMFORD HALL FIFTY TWO EAST FORTY FIRST STREET NEW YORK CITY NOVEMBER TEN EIGHT PM REPORT ON ADDRESS BY THOMAS MIDGLEY GASEOUS DETONATION AND ITS CONTROL PERIOD SERVICES INTEREST IS IN POSSIBLE POISONOUS EFFECTS OF LEAD COMPOUND IN GASOLINE

Midgley has sought to increase the efficiency of gasoline as a fuel for internal-combustion engines. To this end he has sought to compress the air-vapor mixture (before the combustion stage in the cycle) beyond the present practicable limits. To this end he has sought a chemical substance which, when added in small amounts to the gasoline, would prevent the combustion of the highly-compressed explosive mixture from assuming a violent or detonating character, this tending to destroy the motor. In chauffeur's language, he has tried to increase the mileage of gasoline by adding to it an "antiknock" substance.

Midgley found that the best and indeed practically the only worth-while antiknock substance was tetraethyl lead, $Pb(C_2H_5)_4$, a hitherto little-known metallo-organic liquid freely soluble in and volatile with gasoline. Tetraethyl lead in concentrated form is described as a heavy, mobile liquid, smelling like witch hazel. As a vapor, it irritates the eyes and nose. As a liquid it irritates the skin of the hands. If improperly manipulated, it can produce lead poisoning. But as an antiknock, it is required in the proportion of only 3 cubic centimeters to the gallon of gasoline; and such a mixture can be handled in any reasonable way without toxic effects.

When this lead-containing gasoline is burned in a motor cylinder, the lead is converted into a solid inorganic form. It would naturally be supposed that the exhaust would contain finely divided particles of some lead compound; and this free evacuation of the lead is a necessity for the practical continuous use of the fuel in a motor. But Midgley states that thus far in his experiments no lead has been demonstrable in his exhaust gas. On the contrary, it all seems to cling to the walls of the combustion chamber, imparting to the "carbon" a grayish appearance, attacking the nickel of the spark-plug points, and necessitating unduly frequent cleanings and replacements inside the cylinders. Midgley is experimenting with other compounds which, added to the gasoline will obviate this drawback, and will cause the lead to scavenge out with the other waste products.

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The presence of lead in the exhaust will (when the process had advanced to this stage of development) add another poisonous constituent to the carbon monoside already present in the exhaust gases. Moreover, lead as a poison is cumulative. Hence the public-health question arises: Will the use of lead for this purpose cause lead poisoning in those breathing the exhaust gases? The probable answer, according to Midgley, is No; and for the following reason:- Owing to the carbon monoxide present in all automobile and similar exhaust gases, there must be free ventilation in all spaces into which these gases escape, if the air of these spaces is to be breathed. Experiments preliminary to the construction of the Lower-Manhattan-Jersey-City vehicular tunnel show that the highest reasonably-safe concentration of carbon monoxide is about 0.01 of 1 percent, this proportion being breathable, without demonstrable harm, for as much as four hours every day indefinitely. Even if all automobiles using the vehicular tunnel used this lead-containing gasoline, and even if all the lead in the gasoline were discharged into the air of the tunnel, the concentration of lead in the air of the tunnel would still be too low to produce any toxic effect whatever. In other words, the more toxic substance, carbon monoxide, would probably prevent the absorption of the less toxic substance, lead, even under the most unfavorable conditions known to exist, in spite of the more cumulative character of the lead. This, however, is theory only; and Midgley says that he would welcome co-operation and extend fatilities for toxicologic investigation if desired.

COMMENTS BY ROBERTS

There are available, here and now, no figures showing the actual total amount of accumulated lead necessary to cause chronic human plumbism, nor the amount of lead which, after being ingested in small quantities, the human body is able to get rid of day after day, without causing undue strain on the organs of elimination. As an estimate, the human body would probably require a rather large amount of lead, over one gramme at the least, to saturate it to a harmful degree; and it could get rid of only a small amount not over about 5 milligrammes, each day. A fair-sized car, working properly on Midgley's lead-containing gasoline would consume say 3 or 4 gallons daily and discharge into the air about 7 gramme of lead. If as much as one-one-thousandth of the total exhaust were absorbed by any one man, day after day, he would probably accumulate lead and ultimately be poisoned. But as no such proportion of the total exhaust is ever breathed by anyone day after day, the possibility of lead poisoning from this source is to be regarded as remote.

It would nevertheless seem advisable if practicable to detail a competent Service representative to study the effects of this lead-containing exhaust, suitably diluted with air, on animals. If Midgley's work is commercially successful, as seems likely considering its nature and the financial standing of the parties interested, large quantities of lead-containing gasoline will soon begin to be used as motor fuel; and even if such turns out not to be the case, the toxicologic facts obtainable would be of permanent value.

I desire to acknowledge Mr. Midgley's courtesy to me personally and as a Service representative, in explaining and amplifying the points of his address in which the Service is most interested.

Surgeon.

Defendant's Exhibit (GM) No. 251 7338

November 18, 1922.

Doctor Norman Roberts,
Quarantine Station,
Staten Island, N. Y.

My dear Doctor Roberts: -

I have yours of November 13th with enclosure. I think you have gotten the situation remarkably well and I have no comments or corrections to make. However, since talking with you we have been making some rough calculations and find that in the vehicular tunnel with the ventilation as proposed by Fieldner, which is considered absolutely essential to avoid the dangers of carbon monoxide, a man will take into his lungs approximately 1/2 milogram of lead in the four hours that Fieldner calculates as a maximum length of time he should spend in the tunnel. How much of this 1/2 milogram will be absorbed is, of course, an impossible question to answer at the present time, but it does not seem like a very large amount at the most. People must be getting this much lead regularly already in a great many other lines of work.

I sincerely wish that you might be detailed on this problem as I am sure that we could work together with mutual satisfaction.

Always with the kindest personal regards,

I am

Very truly yours,

Chief Engineer,
Fuel Section.

TM-Jr-D

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Defendant's Exhibit (GM) No. 252 7339

FACTORY CORRESPONDENCE

November 20, 1922.

Mr. C. F. Kettering:

SUBJECT: SUMMARY OF PRESENT SITUATION ON ANTIKNOCK MATERIAL.

The result of our research work for the past six years places us in a position to pretty thoroughly predict antiknock compounds of any element. A large number of such compounds are purely imaginary and could not be made. Of those compounds that can be made only the tetra valent compounds of lead appear to have real commercial value, of which tetraethyl lead seems to be the best. However, several problems are encountered in reducing tetraethyl lead to commercial practice.

1. Production. This phase of the tetraethyl lead problem seems to be pretty well solved and we have the assurance of the du Pont Company in the form of a contract that they will produce tetraethyl lead at a price that renders it quite commercial.

2. Utilization. This problem has not been solved and is at present delaying the putting of tetraethyl lead into commercial use. The problem exists due to the fact that litharge is formed by burning tetraethyl lead. While the litharge does no particular harm to the cylinder walls or cylinder head yet when litharge melts it acts as a very powerful flux, and such deposit as occurs on spark plug electrodes where the temperatures become hot enough to melt the litharge causes the spark plug electrodes to oxidize and in the course of a few thousand miles it becomes necessary to replace the spark plugs. The exhaust valve stems and seats suffer in a slightly different way when they become hot enough to melt the litharge. The litharge then forming a hard lump and holding the valve open with consequent burning of the seats thereof. Many substances may be added in small quantities to the gasoline and greatly improve the above conditions. These must contain an acid atom or radical , the lead salt of which forms a double salt with litharge. These substances are various compounds of chlorine, bromine, sulfur, cyanogen groups, carbonate groups, and selenium. However, so far no satisfactory solution has resulted

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as in all cases except Selenium where a sufficient quantity of the addition agent is used, serious reduction in the antiknock value of the tetraethyl lead results. The objection to selenium is of a different nature, the selenium producing very obnoxious odors in the exhaust. It is not felt that the reduction of the antiknock value is at all necessary in order to eliminate the troubles from litharge and experiments are going forward so that we may hope at almost any time to find a sufficiently satisfactory solution to the problem so that initial marketing at least may be started.

3. Poisoning. The suggestion that lead salts will occur in the exhaust gas from motors always gives rise to the question of the possibility of general lead poisoning, particularly in crowded districts due to the inhaling of these lead salts. We have been in touch with Mr. Fieldner of the Bureau of Mines, whose duty it is to look after the ventilation of the proposed vehicular tunnel under the Hudson River, where the concentration of exhaust gases will be the greatest of any place in the world. Based upon Mr. Fieldner's figures for the ventilation of this tunnel required to remove the dangers of carbon monoxide poisoning, we find the possibility of the absorption of 1/2 milogram of lead per day. Doctor Yandell Henderson of Yale, with whom we have been in touch, states that authorities have discovered cases where 1 milogram per day has caused lead poisoning from which it would appear that we are well within safe limits in the use of tetraethyl lead as proposed. We have also been in touch with the United States Bureau of Public Health and find them very willing to cooperate with us in making a final investigation, the results of which should satisfy the most exacting person as to the safety of the use of tetraethyl lead provided the figures by Mr. Fieldner and ourselves are correct.

4. Marketing Problems. The oil companies in general and individual motorists who have been given samples of tetraethyl lead are extremely anxious to see tetraethyl lead commercialized. The possibilities seem so great and

Mr. C. F. Kettering:

the methods of marketing are so numerous that a considerable amount of study must be spent thereon in order to avoid the possibility that the initial policy adopted may not be a serious handicap to later developments. No work along this line has as yet been done.

Thomas Midgley, Jr.,
Fuel Section.

Defendant's Exhibit (GM) No. 253

7312

MASSACHUSETTS INSTITUTE OF TECHNOLOGY
RESEARCH LABORATORY OF APPLIED CHEMISTRY
CAMBRIDGE, MASS.

December 18, 1922.

Thos. Midgley, Jr.,
General Motors Research Corp.,
Dayton, O.

My dear Midge:

Your letter of the 1st and supplementary letter of Dr. Clements of the 4th, sum up the situation with regard to a continuation of our contract with you for work on lubrication. The conditions outlined therein are entirely satisfactory from our point of view and we believe that the contract which Dr. Clements states will be revived, will be O.K.

Dr. Clements mentions an option of purchasing the bearing testing machine at cost at the termination of our contract. I see no reason why this option should not be granted if you desire to purchase at that time.

I am enclosing copy of a letter which Calingaert received from Krause Ever in Germany, which has to do with the poisonous effect of lead compounds. We all feel here that too many orecautions cannot be taken to guard against injury in this work, and have felt it advisable to have Calingaert and Mead take a little time off periodically so that they can be out doors and maintain good physical condition. I merely wanted to point this out because I believe it is a necessary feature of the work, even though it means a somewhat greater expense per working hour.

I should be glad to have any comments you may offer on this letter.

Yours

Walt.

WALTER G. WHITMAN
Assistant Director

WGW/deC

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Defendants' Trial Ex. No. GM-254

(Copy Translated from the German)

Institute of Technology—Berlin

Potsdam, Nov. 30, 1922.

Esteemed Herr Professor:

I accede willingly to your request. There is no doubt in my mind but that the organic lead compounds are very exceedingly dangerous to the organisms of the body.

The compounds seem to possess, even in very reduced doses, the malicious and creeping poisonous effects which are possessed by the inorganic lead compounds and which were criminally used in the middle ages for the slow removal by an apparently natural death of persons, by their heirs-to-be. They do not produce the typical symptoms of lead poisoning such as swelling of the gums and the production of a black line to the gums, and so on, but a slow weakening and enfeebling of the whole body, which ultimately results in death. Frequently the effects of poisoning appears only after a long "latent" period.

I have used every possible means of precaution—permanently working under the hood (in Summer with open windows); rubber gloves; wiping off surfaces in the rooms with bromine water and ammonium sulfide; washing th hands with soap containing sulfide; nevertheless, I think that I have severely damaged my health so that I have been forced to take many vacations from the work already. Furthermore, as I briefly mentioned in an article in the Ber, one of my co-workers, in spite of taking all precautions, was ill several times with acute lead poisoning.

Defendant's Exhibit (GM) No. 256A.

Patented Jan. 1, 1929.

7351

1,697,245

UNITED STATES PATENT OFFICE.

CHARLES A. KRAUS AND CONRAL C. CALLIS, OF WORCESTER, MASSACHUSETTS, ASSIGNORS TO STANDARD OIL DEVELOPMENT COMPANY, A CORPORATION OF DELAWARE.

ART OF PREPARING METALLO-ORGANIC COMPOUNDS.

No Drawing. Application filed April 5, 1923. Serial No. 630,089.

The present invention relates to the art of preparing organic compounds containing lead, and will be fully understood from the following description.

In proceeding in accordance with this invention, lead is prelminarily put in favorable condition for reaction. as for example, by being alloyed with a highly electropositive metal, as an alkali metal or alkaline earth metal. Using sodium for instance. an alloy is made up in the proportions desired. These may vary; for example the sodium may run up to around 20%; but an advantageous formu'a is lead 90% and sodium 10%.

The alloy is suitably subdivided to go through, say for example a 10-mesh screen, and it is advisable that care be taken to avoid exposure to air or moisture. The subdividing may be done in an atmosphere of inert or non-oxidizing character, as nitrogen for instance. If desired, instead of using a separate mill, the alloy may be disintegrated in the final reaction vessel itself, in which case the vessel may also contain a suitable milling or crushing means, or the vessel may be mounted to rotate and be equipped with balls or the like in the manner of a ball-mill, this being particularly advantageous as subse-

the ethyl chlorid, the reaction proceeds favorably in the closed vessel under pressure and is ordinarily complete in 2–6 hours. On completion, any excess ethyl chlorid may be distilled off and condensed, or the reaction vessel may be cooled down and the excess ethyl chlorid be pumped off and compressed so as to be saved for subsequent reactions.

Water may then be introduced, and steam may be bubbled in through suitable pipes. The lead tetraethyl, $Pb(C_2H_5)_4$, produced by the reaction is distilled off with the steam and is condensed and collected in a suitable receiver, and being heavier, it may be drawn off separately from the water of condensation. Generally this manner of removing the lead tetraethyl from the reaction vessel is preferable. but if desired it may instead be extracted by suitable solvents, as ether or acetone, and then separated from the solvent by distillation.

While the use of a catalyst is not essential, where desired such may be employed. In such case there may be added to the reaction mass, for example a metallic chlorid. as ferric chlorid, anhydrous aluminum chlorid or zinc chlorid in amount of 0.25 to 3%; or a metallic catalyst, for instance zinc may be initially

Privaldozent Dr. Grüßner, under whose direction I worked for many years for my doctor's degree, on lead compounds, died from inflammation of the lungs (together with these symptoms) after the bursting of a large flask containing leak alkyls. Whether or not his death is to be ascribed directly to the lead compounds is, of course, not certain, but it was a dismal coincidence; in any case this view is strengthened by the fact that Tafels, who worked with unsaturated lead compounds, died prematurely after repeated illnesses. Of course, "post loc" is not "propter loc," nevertheless, the exceedingly painstaking precautions named above must be recommended.

In my opinion, in addition to the inhaling of the vapors, touching the solutions of the compounds in organic solvents with the hands is exceedingly dangerous as they dissolve in the fat from the hands and so penetrate more deeply. These things can, of course, not be avoided if one works for a long time with the lead compounds.

With the highest esteem,

Your very devoted—E. Krause.

Defendant's Exhibit (GM) No. 255 7345

FACTORY CORRESPONDENCE

February 2, 1923.

Mr. C. F. Kettering:

SUBJECT: SALE OF ANTIKNOCK GASOLINE

On February 1st we opened a tank at a filling station of the Refiners Oil Company, 6th and Main Streets, Dayton, Ohio. Prices—New Navy Gasoline $.21 per gallon; Aviation Gasoline, known as High Test, $.25 per gallon; Benzol Blend 40%, 90% benzol and 60% New Navy Gasoline, $.27 per gallon; our product which we call "Ethyl Gas," $.25 per gallon.

Three hundred and ten gallons were sold on the first day to a variety of motor cars. Records are being kept of the license number and make of car and date of sale.

It was note worthy that merely having a sign out at the filling station did not produce the sale of a single gallon of this material. About 10 o'clock people driving up to have their tanks filled were approached by one of our boys who attempted to sell them the material, not exaggerating the benefits they would derive. The next three hours 70 gallons were disposed of by this method. Shortly after this the local evening newspaper appeared with a notice of the sale of this material as a news item, immediately after which a very steady business developed of customers driving up and asking for the product.

These first sales of course are only out of curiosity, the resale of this material will be the criterion as to how it is received by the public.

T. MIDGLEY, JR.,
Fuel Section.

D

Copies to Mr. Sloan
" Mott

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Defendant's Exhibit (GM) No. 256 7346

FACTORY CORRESPONDENCE

April 9, 1923.

Atlantic Refining Company

The Atlantic Refining Company was visited at their refinery in Philadelphia Tuesday, April 3rd. Doctor Delbridge and several other members were present.

Our plan of marketing Ethyl Gas was explained in detail and it brought forth the following reaction: The Atlantic Refining Company when convinced of the advantages of high compression motors would like to obtain the exclusive territory of Pennsylvania and Delaware for a period of five years. I expressed the doubt that this was not feasible as it was too long a period of time. I agreed to wait two weeks for them to come to some definite decision and to extend this period two more weeks upon request from them at that time before offering any of this territory to other jobbers. Doctor Delbridge confidentially told me he considered the liklihood of the Atlantic taking this up at the present time to be less than one chance in ten.

For the general information of the Atlantic Refining Company it was decided to put high compression pistons in a number of their trucks so that they might study first hand the advantages to be derived therefrom.

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Verbal Orders Don't Go

Tide Water Oil Company

On April 4th I had lunch with Mr. Byron Benson of the Tide Water Oil Company and discussed with him our general plan of marketing Ethyl Gasoline. This brought from Mr. Benson the following reaction: The Tide Water Oil Company would like to obtain the exclusive territory of New York City for one year, marketing Ethyl Gas through their filling stations and dealers in the regular way that we propose. They must however, be assured that the mixing meter is as nearly crook proof as possible and also that a very intensive and spectacular advertising compaign be carried on. The matter was left open for two weeks at which time I propose to see Mr. Benson again and take with me if possible a mixing meter to meet his requirements and also the definite advertising policy which we would establish in New York City.

Standard Oil Company of New Jersey

On April 3rd and 4th I was in conference with Mr. Frank Howard in the Standard Oil Building.

Mr. Howard informed me that they were applying for a patent for making tetraethyl lead from the sodium

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lead alloy and ethyl chloride under pressure and that they were sure they could make tetraethyl lead for $6.00 per gallon. Mr. Howard also expressed the reaction of Mr. Teagle and Mr. Myers voiced towards our general proposition as follows: They would like to antiknock their entire production of gasoline at a premium of 1 cent per gallon without advertising or telling the public anything about it. Likewise they would like to bring this about without paying us any profits whatsoever for the use of tetraethyl lead.

I asked Mr. Howard why they did not go into the production of tetraethyl lead if they could make it so cheaply, we would buy it from them and I thought if they gave us the proper guarantees that we might permit them to use it in their own gasoline without paying any royalties to us. Mr. Howard stated that they were not chemical manufacturers, I then suggested to him that they consider the following proposition subject of course, to ratification by my principals. They would establish a source of production of tetraethyl lead amounting to at least 100 gallons per day and we would then sign with them a similar contract to the one now in force with the duPont Company. I felt that this was such a good proposition from

Mr. Howard's standpoint that if he was not bluffing about the process they are patenting, that he could not fail to accept it. Id did not awake any enthusiasm on his part.

Mr. Howard suggested that the General Motors and Standard Oil Company of New Jersey pool interests in regard to antiknock gasoline and Mr. Howard felt that his patent for making tetraethyl lead opened the doors to such negotiations. It cannot be denied that from our standpoint it would be a very desirable thing to have the New Jersey Company lined up with us. I suggested this to Mr. Howard as something entirely aside from the patent situation which I do not believe is of any extreme importance and asked Mr. Howard what his ideas were regarding an arrangement between our respective companies. Mr. Howard had no suggestions to make other than that he thought it would be highly desirable if Mr. dupont or some of our chief executives would arrange to see Mr. Teagle in which case all parties concerned could put their cards on the table and arrive at an understanding. I personally should heartily endorse such a procedure and feel that could some working arrangement be arrived at with the Standard on the general proposition of antiknocking gasoline it would advance our program probably

more than any one thing could do.

Note: The domestic sale by Standard Oil Company of New Jersey is about 10% of the total of he country.

T. Midgley, Jr.,
Chief Engineer - Fuel Section.

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The alloy is suitably subdivided to go through, say for example a 10-mesh screen, and it is advisable that care be taken to avoid exposure to air or moisture. The subdividing may be done in an atmosphere of inert or non-oxidizing character, as nitrogen for instance. If desired, instead of using a separate mill, the alloy may be disintegrated in the final reaction vessel itself, in which case the vessel may also contain a suitable milling or crushing means, or the vessel may be mounted to rotate and be equipped with balls or the like in the manner of a ball-mill, this being particularly advantageous, as subsequently in the reaction the balls can also serve as agitating and heat transfer means. Ethyl chlorid is introduced in molecular proportion to the lead, or in excess, and if desired the sub-dividing step may be carried out in an atmosphere of ethyl chlorid as the oxygen-excluder. With the alloy subdivided and the proper amount of ethyl chlorid provided, the reaction is ready to proceed. It is desirable that the ethyl chlorid, or the like, be free from traces of water, having preliminarily been dried for instance by calcium chlorid or other suitable means. The reaction vessel should be pressure resistant and equipped with heating and cooling jackets or coils and suitable agitating or stirring means, so that adequate temperature control can be maintained.

Although reaction will occur slowly at ordinary temperatures, practically the reaction is started by warming up to about 35° C.; and cooling is subsequently used as may be necessary, the temperature, for good results being maintained at about 40–70° C., for example. Toward the end the temperature may be allowed to go higher, e. g. 100° C. Although this is above the boiling point of oil separately from the water of condensation. Generally this manner of removing the lead tetraethyl from the reaction vessel is preferable, but if desired it may instead be extracted by suitable solvents, as ether or acetone, and then separated from the solvent by distillation.

While the use of a catalyst is not essential, where desired such may be employed. In such case there may be added to the reaction mass, for example a metallic chlorid, as ferric chlorid, anhydrous aluminum chlorid or zinc chlorid in amount of 0.25 to 3%; or a metallic catalyst, for instance zinc may be initially added in the alloy, in amount of 0.5 to 3%.

A catalyst is more particularly of value where the alloy departs from the 90:10 proportion, and with a catalyst the alloy may vary in composition from about 81% to 94% for the lead and from about 6% to 19% for the sodium.

In place of ethyl chlorid, ethyl bromid may be used if desired. In this event it will generally be desirable to maintain the temperature 10–15° C. higher. Instead of the ethyl halids also methyl or other hydrocarbon halids may be employed to obtain correspondingly lead tetramethyl or other hydrocarbon compounds.

We claim:

1. The improvement in the art of preparing lead tetraethyl, which comprises alloying lead with about 10% of sodium, subdividing the alloy while substantially avoiding oxidation, and reacting upon the alloy with ethyl chlorid at a temperature of 35–70° C.

2. The improvement in the art of preparing lead tetraethyl, which comprises alloying lead with sodium, subdividing the alloy while substantially avoiding oxidation, and react-

Defendants' Trial Ex. No. _____
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ing upon the alloy with ethyl chlorid at a temperature above the normal boiling point of the ethyl chlorid.

3. The improvement in the art of preparing hydrocarbon compounds of lead, which comprises alloying lead with a highly electropositive metal, subdividing the alloy while substantially avoiding oxidation, and reacting upon the alloy with an alkyl chlorid at a temperature above the normal boiling point of the chlorid.

4. The improvement in the art of preparing hydrocarbon compounds of lead, which comprises alloying lead with a highly electropositive metal, and reacting upon the alloy with an alkyl chlorid at a temperature between about 70° C. and atmospheric temperature.

5. The improvement in the art of preparing lead tetraethyl, which comprises alloying lead with sodium, and reacting upon the alloy with ethyl chlorid at a temperature between about 70° C. and atmospheric temperature.

6. The improvement in the art of preparing lead tetraethyl, which includes subdividing an alloy of lead and a highly electropositive metal while substantially avoiding oxidation, and reacting upon the alloy with ethyl chlorid at a temperature above the normal boiling point of the ethyl chlorid.

7. The improvement in the art of preparing organic compounds containing lead, which includes subdividing an alloy of lead and a highly electropositive metal while substantially avoiding oxidation, and reacting upon the alloy with an alkyl chlorid at a temperature above the normal boiling point of the chlorid.

8. The improvement in the art of preparing lead tetraethyl, which includes reacting upon an alloy of lead and a highly electropositive metal with ethyl chlorid in the presence of ferric chlorid as a catalyst.

9. The improvement in the art of preparing organic compounds containing lead, which includes reacting upon an alloy of lead and a highly electropositive metal with an alkyl chlorid substantially freed from traces of water.

10. The improvement in the art of preparing organic compounds containing lead, which includes reacting upon an alloy of lead and a highly electropositive metal with ethyl chlorid at a temperature above the normal boiling point of the ethyl chlorid.

11. The improvement in the art of preparing organic compounds containing lead, which includes reacting upon an alloy of lead and a highly electropositive metal with ethyl chlorid.

12. The improvement in the art of preparing organic compounds containing lead, which includes reacting upon an alloy of lead and a highly electropositive metal with an alkyl chlorid while agitating the mass.

13. The improvement in the art of preparing organic compounds containing lead, which includes reacting upon an alloy of lead and a highly electropositive metal with an alkyl chlorid.

14. The improvement in the art of preparing organic compounds containing lead, which includes reacting upon lead with an ethyl halid at a temperature above the normal boiling point of the ethyl halid.

15. The improvement in the art of preparing organic compounds of lead, which comprises reacting upon an alloy of lead and a highly electropositive metal with an alkyl chlorid in the presence of a metallic chlorid selected from the group consisting of ferric chlorid, anhydrous aluminum chlorid or zinc chlorid.

16. The improvement in the art of preparing organic compounds containing lead, which includes reacting upon an alloy of lead and a highly electropositive metal with an ethyl halid at a temperature above the normal boiling point of the ethyl halid.

CHARLES A. KRAUS.
CONRAL C. CALLIS.

[5150]

COPY

Defendant's Exhibit (GM) No. 257

7353

Joseph H. Senior

86 Broadway
New York

November 26, 1923

Mr. E. M. Clark
Mr. J. A. Moffett
BUILDING

Dear Sir:

As per your request the undersigned left New York on November 18th and visited Dayton, Hamilton and Cincinnati with a view of making an intensive study of the results being secured in the marketing of the General Motor Product known as Ethyl Gas and beg to report their findings as follows:

On our arrival at Dayton we were met by a Mr. Sieverthaler, one of the General Motors engineers who has been identified not only with the marketing of this product but as an investigator of complaints regarding same. We were taken by Mr. Sieverthaler to the office of the Refiners Oil Company who have been given the marketing privilege of Ethyl Gas in the State of Ohio. We were received by Mr. Talbot, Vice President and General Manager, who very kindly put at our disposal not only his experience but his books and figures for study. Mr. Talbot is thoroughly sold on the product and made a general statement to the effect that it had resulted in greatly increased business; that users were satisfied with the product and that they remained users and offered to give us names of some of the users so that we could interview them for ourselves. We however only accepted his offer in one case, with the result that we got a very satisfactory report, but felt naturally that such buyers as might be recommended by Mr. Talbot might be more or less "hand-picked." We decided to interview buyers as they called at some of his service stations so as to get a direct independent reaction to our queries. We therefore interviewed buyers at their 6th and Main St. Service Station and their 2nd and St. Claire St. service station, both in Dayton, and the 8th and Central St. Station in Cincinnati, all three of these service stations being large sellers of motor fuel, and in every case where the buyer was at all intelligent, the answers were to the effect that they secured more flexibility in the operation of their car, the elimination of the "knock" and more mileage. In some instances statements were made that they were getting as much as 40% increased mileage. To sum up, every individual buyer interviewed expressed satisfaction and we could not find a single buyer who had used Ethyl Gas who had gone back to the Motor. We did find however some buyers who were using Ethylized Navy Specification Gasoline, which is the regular motor fuel being sold in this section of the country, had changed to what is known as "High Test Gasoline" (68-70 straight run), their arguments being that with cold weather coming on they could get a much quicker start with the High Test than with the Navy treated with Ethyl. It also developed that some buyers were not only using the High Test but had also purchased that grade Ethylized at a total premium of 7¢ per gallon above the regular Motor.

We also talked with the representatives at the Service Stations of he Refiners Oil Company and with two representatives at the Standard Oil Company of Ohio service stations. The former representatives were in every

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case very enthusiastic over the merits of the new fuel. One of the Standard service station representatives stated that he did not know much about the Ethyl Gas but that he undoubtedly was losing business due to the fact that he did not sell Benzol or High Test Gasoline. This station was doing a business of approximately 800 gallons per day, most of which was sold to trucks between 6 and 8 in the morning.

The second Standard service station we visited was at Oakwood, a suburb of Dayton where the sales averaged but 250 gallons per day. The attendant at this station proved very energetic and polite and undoubtedly would be a business getter on equal competitive conditions with any other we have seen. He stated however that due to the fact that he had only the one brand to sell, buyers demanding either High Test, Benzol or Ethyl compound went to his competitor on the opposite corner. This competitor's business averaged between 1100 and 1200 gallons a day divided as follows: 30% Ethyl, 10% High Test, 10% Benzol and 50% Motor. The great difference in sales between these two stations however is not accounted for solely by the fact that the Standard Oil carried only one brand, but due to their poor location as compared with the competitor.

The Refiners Oil Company in Cincinnati show that from June to October, during which period only was Ethyl marketed, their sales of this product amounted to 28%, High Test 17%, ordinary Motor 55%, their manager stating that undoubtedly the sales of Motor would decrease and the sales of High Test increase when the colder weather came on.

PRICES: We found the prices to be the same all through the district of Ohio that we visited:

Navy Specifications	18¢
Ethylized Navy	21¢
High Test (68-70) straight run)	22¢
Ethylized High Test	25¢
Benzol	24¢

From the above figures it will be seen that approximately even in such a short time as the Ethyl has been marketed, it has an average of better than 25% of the total at these stations and that the prices of the premium products bring the total up to 50% for which the consumer pays from 3 to 7 cents per gallon more than for the straight Motor.

On our return East we stopped off at Newark with a view of interviewing the drivers of the ten motor trucks who have been using this product for about seven weeks and while we only had an opportunity of talking with four drivers out of the ten, their reports of the use of this material were almost identically the same as those received from the consumers in the West. The man in charge of these trucks told us that the drivers were practically unanimous regarding the difference of the fuel which they had been served out of the special pump. We have also found by actual

records that the ten trucks using Ethyl Gas show a net increase in mileage of approximately 10% which substantiates the claims made by the drivers in many instances that they were getting not only more power and eliminated "knock" but better mileage.

Mr. John Skens, owning a Buick car in Newark, loaned it to one of the salesmen for two or three days using regular gasoline. A couple of days after this use as above mentioned, he again loaned the car to the salesman with Ethyl in the tank without advising the salesman however of this fact. Mr. Skens reports that the salesman called him up and asked what had happened to the car, that he was getting so much 'pep' that it was getting away from him. This would prove to our minds that those who have no knowledge of the change in fuel have found the difference in favor of the Ethyl Gas from the ordinary user's standpoint.

Yours very truly,

(signed) J. H. Senior
A. Clarke Bedford
Dr. C. O. Johns

JHS:M

COPY

MEMORANDUM

June 18, 1924.

Pursuant to the instructions of the conference of yesterday, Mr. Midgley and Mr. Howard discussed this morning the question of what compounds should be royalty-bearing, in the sense that General Motors would be entitled to a preferential proportion of the profits.

Jersey's position has been that lead tetraethyl and such other compounds as General Motors had heretofore definitely shown to be of substantial value for this purpose should be listed and that royalty should be paid upon these, regardless of the outcome of the patent situation but rather on the principle that these compounds represented the essential contribution of General Motors to the situation and were the foundation of the present business.

General Motors' position is that they feel themselves equitably entitled to all antiknock compounds, since they were the first to show the possibility of improving gasoline by addition of such compounds to it.

An agreement was reached as follows: Mr. Midgley and Mr. Howard will recommend that the question of royalties to be paid will depend upon what patents are issued, and the adjudication of such patents. The Foundation Company will pay a specified proportion of its profits as royalty on any compounds (lead tetraethyl or any other) only so long as there shall be valid patent claims covering same.

In recognition of the fact that the effort of Jersey should be to aid in getting and sustaining patent claims, rather

than to prevent obtaining them or to aid in breaking them, as its selfish interest would on the face of the thing require, General Motors will agree to a division of excess profits on a basis of 62½ - 37½, rather than on a basis of 70 - 30 proposed yesterday.

Mr. Midgley and Mr. Howard will make this suggestion that this solution of the difficulty be accepted by both sides.

hv
copies to Mr. Clark and Mr. Moffett.

Defendant's Exhibit (GM) No. 259

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MEMORANDUM

June 18, 1924.

Referring to conference had yesterday with the General Motors on tetra-ethyl lead; those present being: Representing General Motors, Messrs. Sloan, Brown and Midgley; representing Jersey, Messrs. Moffett, Howard, Swain and Clark.

The matter was taken up by reviewing Mr. Howard's letter covering the results of his last conference with Mr. Sloan, at which time General Motors proposed the formation of a joint company for the purpose of distributing anti-knock agents and specifically tetra-ethyl lead or other compounds that might come within the scope of the General Motors' patents. The joint company to have a 15% return on its invested capital and General Motors then to receive one half of the profits above this 15% as royalty, the balance to go to the joint company. This, in effect, meant division of the net profits on the basis of 75% to the General Motors and 25% to Jersey. This information had been transmitted to Mr. Teagle by telegraph and to which we had replied by suggesting a 30% return on the invested capital of the joint company, a graduated royalty on volume of business to General Motors until a fixed maximum sum had been paid, then discontinuance of royalty and division of profits on a 50-50 basis.

The conference yesterday took the matter up at this point and after lengthy discussion Jersey made a counter proposition of 22-1/2% return on the invested capital, the excess profits then to be divided, 25% to General Motors as royalty

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and even division of the remainder. This, in effect was splitting the excess profits, over the 22-1/2% capital return, 62-1/2% to General Motors and 37-1/2% to Jersey. After lengthy discussion General Motors countered with a proposal of division of the excess profits on the basis of 70-30. This we definitely refused and suggested that we could not recede from our position of division on 62-1/2-37-1/2 basis and suggested that, unless they conceded, the conference might as well end. Messrs. Sloan and Brown then retired for a conference, came back and continued the discussion by taking up other points of more or less technical nature. These points were discussed until quite late, at which time they were left to Messrs. Midgley and Howard to attempt to reconcile the differences. The particular point was specifically defining the anti-knock compounds to be brought within the scope of the General Motors' patents on which royalty should be paid.

We believe that the proposal for a split of the excess profits on a 62-1/2-37-1/2 basis is a liberal concession to General Motors as royalty and that we should not agree to any

material change from this basis. We believe the General Motors will concede this and we are inclined to stand firm, even should it result in breaking off negotiations. The fact is that our counter proposal of graduated royalty with a fixed maximum was traded down to the 25% fixed royalty basis without any concession on the part of General Motors.

Another conference is to be had tomorrow afternoon.

EMC/ML

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Defendant's Exhibit (GM) No. 261

7360

TREASURY DEPARTMENT

UNITED STATES PUBLIC HEALTH SERVICE

PUBLIC HEALTH BULLETIN No. 158

AUGUST, 1925

PROCEEDINGS OF A CONFERENCE TO DETERMINE WHETHER OR NOT THERE IS A PUBLIC HEALTH QUESTION IN THE MANUFACTURE, DISTRIBUTION, OR USE OF TETRAETHYL LEAD GASOLINE

PREPARED BY DIRECTION OF THE SURGEON GENERAL

WASHINGTON
GOVERNMENT PRINTING OFFICE
1925

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LIST OF ORGANIZATIONS, INDUSTRIAL AGENCIES, AND GOVERNMENT BUREAUS REPRESENTED AT THE CONFERENCE, WITH THE NAMES OF THEIR REPRESENTATIVES

American Federation of Labor:
A. L. Berres.
Mrs. Grace M. Burnham, *Director Workers' Health Bureau.*
Miss Harriet Silverman.
American Institute of Chemical Engineers:
Dr. D. E. Howe.
American Oil Co.:
John M. Klein.
Lee Sonneborn.
American Petroleum Institute:
Robert Welch.
F. B. Dow.
American Public Health Association:
Dr. Henry F. Vaughan.
J. A. Tobey.
Anglo-American Oil Co.:
H. S. Tegner.
Baltimore City Department of Health:
Dr. J. H. Shrader.
Barrett Co.:
S. R. Church.
Brown University:
Prof. C. A. Kraus.
Bureau of Chemistry:
Dr. C. A. Browne, *Chief.*
Dr. W. W. Skinner, *Assistant Chief.*
E. W. Schwartze.
Bureau of Labor Statistics:
Miss Whitney.
Bureau of Mines:
Dr. H. Foster Bain, *Director.*
Surg. R. R. Sayers (*detailed from the U. S. Public Health Service*).
C. A. Taylor.
Dr. W. J. McConnell.
William Yant.
Bureau of Standards:
Dr. H. C. Dickinson.
Doctor Thompson.
Carnegie Steel Co.:
B. M. Livezey.

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Chemical Warfare Service:
Lieut. Col. Edward B. Vedder, M. C.
Cincinnati College of Medicine:
Dr. Robert A. Kehoe.
Columbia University:
Dr. Haven Emerson.
Dr. Frederick B. Flinn.
Department of the Interior:
Hon. Hubert Work, Secretary.
Duppé Motors Co.:
N. P. Duppé.
E. I. du Pont de Nemours & Co.:
Irenee du Pont.
W. F. Harrington.
Charles E. Weston.
Charles L. Reese (*President American Institute of Chemical Engineering*.
Dr. A. E. Smith.
Ethyl Gasoline Corporation:
W. Gilman Thompson (*Medical Consultant Standard Oil Co. of New Jersey*).
C. F. Kettering.
Thomas Midgley, jr.
Dr. Graham Edgar.
R. W. Webb.
A. W. Marwell.
Federal Oil Board:
C. W. Waterman, *Manager*.
General Motors Corporation:
C. F. Kettering (*also with Ethyl Gasoline Corporation*).
Geological Survey:
Dr. George Otis Smith, *Director*.
Gulf Refining Co.:
Dr. W. A. Gruse (*of Mellon Institute*).
Harvard University:
Dr. Joseph C. Aub.
Dr. Cecil Drinker.
Dr. David Edsall.
Dr. Alice Hamilton.
Prof. Reid Hunt.
Johns Hopkins University:
Dr. W. H. Howell.
Dr. K. K. Marshall.
National Research Council:
Dr. Ludwig Hektoen.
Dr. E. W. Washburn.
National Safety Council:
Paul Frederick Stricker.
Navy Department, Bureau of Aeronautics:
Lieut. S. B. McMurrain.
New York Academy of Medicine:
Dr. E. H. L. Corwin.

New York City Department of Health:
Dr. J. A. Shears.
New York State Department of Health:
Dr. M. Nicoll, jr., *Commissioner of Health.*
Dr. Augustus Wadsworth.
New York, Reconstruction Hospital:
M. DeM. Touart, *Medical Director.*
Ohio State Department of Health:
Dr. E. R. Hayhurst.
Pennsylvania State Department of Labor and Industry:
Dr. Francis D. Patterson, *Chief of the Division of Hygiene and Engineering.*
Philadelphia City Department of Health:
Dr. William C. Robinson.
Standard Oil Co. of Indiana:
Dr. F. R. Morton, *Medical Director.*
Standard Oil Co. of New Jersey:
Dr. C. C. Johns.
E. M. Clark.
R. A. Van Eaton.
F. A. Howard.
State and Provincial Health Authorities:
Abel Wolman, of the Maryland State Health Department (*representing Dr. Johns S. Fulton, State Health Officer.*)
Steel Products Co., Cleveland, Ohio:
C. E. Thompson.
Studebaker Corporation:
A. J. Chanter.
E. J. Miles.
University of Pennsylvania:
Dr. H. F. Smith.
United States Tariff Commission:
Frank Talbot, of the Chemical Staff.
The Texas Co.:
Sherman Ford.
Yale University:
Dr. W. H. Haggard.
Dr. Yandell Henderson.
United States Public Health Service:
Surg. Gen. H. S. Cumming, *Chairman of Conference.*
Asst. Surg. Gen. A. M. Stimson.
Asst. Surg. Gen. J. D. Long.
Surg. L. R. Thompson.
Surg. G. W. McCoy.
Prof. William Mansfield Clark.
Prof. Carl Voegtlin.
Dr. H. D. Gibbs, Senior Chemist.

PROCEEDINGS OF A CONFERENCE TO DETERMINE WHETHER OR NOT THERE IS A PUBLIC HEALTH QUESTION IN THE MANUFACTURE, DISTRIBUTION, OR USE OF TETRAETHYL LEAD GASOLINE

The meeting was called to order at 10 a. m., May 20, 1925, at the Bureau of the United States Public Health Service (Butler Building, Third and B Streets SE.), Washington, D. C., by Surg. Gen. H. S. Cumming, presiding.

The CHAIRMAN. I will ask the meeting to come to order. I wish to introduce to you Assistant Secretary of the Treasury McKenzie Moss, who will open the conference.

Mr. MOSS. Ladies and gentlemen, I think I was born with too much sense to endeavor to discuss the questions which will be before you for determination, or even to endeavor to state the issues. I do not know that I would be able even to pronounce some of the words contained in the title. I am merely here to extend, on behalf of the secretary, a welcome to you and to express the confident belief that around this council table you gentlemen will be able to bring to a fair settlement and solution the problems which have brought you together. That is my mission and it has been performed.

The CHAIRMAN. Ladies and gentlemen, I take pleasure in introducing to you Secretary Work, former president of the American Medical Association.

Secretary WORK. Surg. Gen. Cumming and gentlemen of the conference, the applause that followed Secretary Moss's address was partly due, perhaps, to the brevity of it, so I will take notice and be equally brief. This conference has very much to consider from different angles. I became interested in it first from the viewpoint of public health. If this new agent, which it is proposed shall have public general use in every car, is prejudicial to health we should know it and the public should know it. I am interested in it also because of my present position in association with the Bureau of Mines, which is a scientific bureau, as you know. The Bureau of Mines has been making a careful experimental study in this line for several months. A few months ago they put out a statement which was accepted as final. It was not intended to be final. It was really a progress report. Since that time the bureau has been pursuing these studies in the same general direction, and they

will lay before you the results of these studies. This matter that you are called together to discuss, is, I think, a very important one—one of the most important questions up before the public to-day. It has an economic bearing, possibly has a health bearing, and its commercial relations may be very extensive, indeed.

This is largely conjecture. None of us knows much about it as yet, so the purpose of this conference is very important, and your deliberations will take, I assume, some days. I can spend only a moment with you, but I am pleased to have had the opportunity to express my appreciation of your assembling here to discuss this question.

The CHAIRMAN. First, I want to express my appreciation to those gentlemen who have accepted an invitation to come to this conference. It is unnecessary for me to enter into any detailed explanation as to the purpose for which you have been asked to come together or the importance of the outcome of the conference. It is, however, perhaps advisable to say a word in the beginning as to the reason for inviting you to a conference and the object which we hope to gain as a result of your advice and counsel.

The Public Health Service, particularly through its division which has to do with the study of problems relating to industrial medicine, has long been interested in lead poisoning in the industries and has made some investigations along this line. We were therefore interested two years ago when we learned that one of the large corporations in this country in its endeavor to increase the efficiency of fuel used in internal combustion engines was experimenting with certain lead compounds to be used in commercial gasoline.

A little later on the question of an investigation as to the effect of these compounds came up, and after a conference with representatives of the Bureau of Mines it was determined, in view of the fact that the Public Health Service had no funds available for the purpose, that the investigation should be made by the Bureau of Mines.

Early in the winter I received letters from several gentlemen who had been interested in the matter, inviting attention to the potential dangers in the general use of tetraethyl lead and suggesting that a conference be called to consider the matter. After correspondence with everyone engaged in such investigations, so far as we could ascertain, it was determined that a conference at that time would be somewhat premature in view of the fact that none of the investigations had been completed.

Upon completion of the preliminary report of the Bureau of Mines, and after a conference with Doctor Sayers and the staff of the Hygienic Laboratory, I decided that it would be advisable to hold a conference as soon as practicable, and found that the report of the medical committee working at Columbia University, together with

other reports, would be available about the middle of May. I therefore took the liberty of requesting you to be present at this time.

It seems unnecessary to inform you that this is in no sense a legal hearing; in fact, there are no Federal laws which authorize the Public Health Service to take jurisdiction regarding the interstate shipment of substances such as tetraethyl lead, even should it be determined that they are injurious to public health. On the other hand, it is the duty of the Public Health Service to investigate such questions and to inform the public as to the result of its investigations, restrictive measures being part of the police power of the several States and municipalities. However, I am quite certain, from assurances given both to me and to the public, that no police measures will be necessary in the premises should the use of tetraethyl lead be determined to be detrimental to the public health.

It is earnestly desired that we shall confine our conference as nearly as possible to the determination of such facts and to the reporting of such investigations and experiences as may lead to a definite determination as to the hazards, if any, which follow the manufacture, distribution, and use of tetraethyl lead and similar substances, not only to those who are engaged in the manufacture and distribution of the compound, but, more particularly, perhaps from my standpoint, to the public at large. The Public Health Service asks your cooperation in arriving at the proper solution of the problems.

I fully realize the responsibility imposed and the confidence that has been given to me, and I am quite sure you are all going to help me and help each other arrive at a solution of this problem.

I am sorry that we are not all around a small table. In our first study we had the advantage of the psychology of sitting around a conference table—we have grown a little larger than any available table—but I hope you will feel you are around a common council board.

I have thought it would be interesting, at least to some of us, if we begin this conference by asking someone to give us the history of the development of this tetraethyl lead in its relations to gas engines, and Mr. Kettering, the president of the Ethyl Gasoline Corporation, will give us the historical account.

Before he does so, may I say that I thought we would all be interested in seeing the working of one of the engines at a proper time. That will be demonstrated to you later.

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MR. C. F. KETTERING

President, Ethyl Gasoline Corporation

Mr. Chairman, ladies and gentlemen, about 1914 we undertook to determine what were the essential factors in an internal-combustion engine which prevented us from getting more economy. As you perhaps know, it is possible to build internal-combustion engines which, when at full load, show very good percentage of efficiency. That has been pushed up to as high as 30 per cent, but inasmuch as in the automobile we very seldom drive at anything but a very small portion of the load, the efficiency falls off quite markedly with a decrease in the load. We undertook to study why it was, or what could be done that would assist in giving us more efficiency at the point where the public drive their cars.

We are getting to-day about 5 per cent of the energy out of gasoline; 95 per cent of it is thrown away. As I said before, it is possible, however, to push up on full load so that with the airplane engine or the motor-boat engine, we obtain up to a maximum of 30 per cent, and you can get fairly normal operation at around 20 per cent.

In that study there were a great many problems brought out because the instrumentation that was necessary to make these determinations had not been thoroughly developed, so we were confronted as we went along with continually having to stop our work on the actual study in order to develop instruments whereby we could make determinations that would have an actual quantitative value. There was as a rule abundant qualitative information about this, but none of it had been reduced to a quantitative basis.

After a preliminary study we discovered that with the fuels, as they now exist, one of the things necessary was to increase the compression of the motor. To explain what that is, I will say this: In the ordinary automobile motor as we have it to-day, and we will consider just a single-cylinder engine, here is the way the thing works. There is a cylinder in which is fitted a piston and there are two valves in that cylinder. We will say that our engine is standing still. The piston moves down, and as it moves down a valve opens which allows a mixture of gasoline and air to flow into that cylinder. That valve then closes, the piston goes up and compresses that mixture until it reaches nearly top center, then a spark is introduced into it and the mixture burns and an explosion of the gas is obtained; near the bottom of the stroke the other valve is opened and when the piston goes up those exhaust gases are ejected, save what was in the space above the piston. That thing is repeated. In other words, a cylinder in the ordinary gas engine, as it is known in the automobile to-day, gives you one explosion for every two revolutions, the

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sequence being, first, a drawing in of the mixture; second, a compression of it; third, a firing and expansion of it; and fourth, an exhalation, and that is the way they got the term, "a 4-cycle motor," a cycle being the passing of the piston once over the cylinder.

Now the amount of the exhaust gas which is retained in the cylinder is the function entirely of that space which is above the piston, so that when you have a full load or a full charge in this engine, the per cent of the mixture which is retained in the engine is relatively small compared with the total amount taken in, but when you are taking only a little bit of mixture in, as for a quarter or half load of the engine, that dilution factor becomes relatively large. So it is desirable to cut the space down above the piston, and that is what, in engineering technology, we call raising the compression. In other words, it is simply reducing the space into which that mixture is compressed just previous to firing.

There are two or three factors which obtain when you raise the compression—two or three things which happen. First of all, you get a better burning efficiency; second, the dilution factor is reduced because the amount of exhaust gas which is retained there is smaller; and third, there is a smaller amount of surface exposed to the very hot gases at the time of combustion; so you gain in three different factors by raising the compression.

In the Diesel engine—this is simply by way of explanation—its result is accomplished not by taking the mixture into the cylinder in the way we do in the ordinary gas engine but by taking in the air and then compressing it; and then, after it has reached compression, the fuel is put into the engine at the definite rate at which it is to be burned. That is a differentiation from the ordinary automobile engine in that we take into the cylinder both the gasoline and the air, and they are compressed together, so that the Diesel engine has accomplished the raising of compression by keeping the fuel out of the mixture before you want it to burn.

Any attempt we were able to make to raise the compression was always accompanied by a corresponding gain in efficiency, but it was not accepted by the public because of the fact that when you tried to use the engine at full load you got what we call a "knock." That is the familiar sound known to everybody who drives an automobile when he tries to climb a hill. He gets a little carbon in the motor. In other words, we could not supply to the public the gain possible by engine alterations because of that very undesirable knock, and it was undesirable from two standpoints, first, because it might cause injury to the motor, and second, because the driver thinks there is something wrong with his motor. Therefore it was noncommercial from that standpoint.

So, after we had developed the possibilities of what might be done by the use of increase in engine efficiency, we then attacked the problem of whether we could introduce anything into the fuel which would stop this knocking. At that time none of us had any very definite knowledge of what was happening to such an engine. I do not know that to-day we know definitely what happens. In other words, we have found that those things like combustion, things we have known about the longest, the simple burning of a fuel and air, explained so simply, still have a lot of very technical things related to them, and are not as simple as the words might indicate.

At this point we developed quite a number of instruments which helped us to determine to a certain extent what was happening physically inside the engine cylinder. We found out that with ordinary natural gas we could produce certain results and with the higher-gravity gasolines, the aromatic series of compounds, alcohols, etc., we could get the high compression without the knock, but in the great volume of fuel of the paraffin series we could not do that. But we did prove that if we could use the motor at those compressions our efficiencies could be very greatly increased. So we started to try different materials which might, if put into the fuel, produce the desired results.

One of the first things that we used, and which has always been regarded as a sort of bench mark from which we reckon, is ordinary iodine, which when added to the fuel will completely stop the knocking. By way of explaining what the knock is, it has been proved by experiments in this country and abroad that the normal rate of burning of gasoline and air can proceed at quite different rates and that if the ordinarily efficient work be represented by 1 these rates are some place between sixty and seventy times as high, so that the change of rate is very much greater; in other words, sixty or seventy times greater; that the rate of burning is so rapid that the temperature goes very high, the radiation is very high. I might explain at this point that when we got to those very high pressures and to those very high temperatures the radiation rate from the flame is exceedingly great, and inasmuch as radiation can pass entirely through those gases without doing any heating it does not do a bit of work. It is just like having the mixture full of holes; and the radiation does no work until it strikes the cylinder wall and heats it.

After introducing the iodine we were first of the impression that perhaps it was the color added to the fuel that did something, because we felt that perhaps the color of the fuel did something in the way of absorption of radiant energy, very much as the early plants paint themselves red on the underside to absorb radiation and help their growth, but we disproved that supposition by using some

forms of iodine which are colorless. We found it was purely a molecular proposition and had nothing to do with the color, and we also demonstrated it by the use of some other colored materials that supplied the color but did not produce the other results. So finally we had this one material which we could introduce, which was a starting point from which we could make comparisons.

It took about 3 per cent iodine to be equivalent to 40 per cent benzol, and our methods of rating gasoline have been based on this line. We were taking a certain standard gasoline and adding 40 per cent benzol to it. That permits a certain raising of compression and a certain operation of the motor. We accepted that as a standard of compressions. Of course, iodine was out of the question from a commercial standpoint because of its not being obtainable.

Another very interesting thing in the use of benzol, or of iodine, was that it helped to produce carbon. So your cylinder would fill up very quickly with a very flaky type of carbon. I mention the word carbon. In the ordinary garage they will say, "Get the carbon cleaned out of your motor." The reason for that is that the carbon is one of the best heat insulators we have.

A small cake of carbon on the inside of the motor takes up space, it raises compression, and it slows the conduction of heat from the residual gases to the cylinder wall, and the difference between a satisfactory burn and an abnormal burn is very delicate when it comes to the point of temperature. A few degrees plus or minus will throw the thing from a satisfactory operation to an impossible operation.

I have seen that tried out on airplane motors, and it is rather interesting. Take a motor and a fuel condition which you can make normal; get up in the air and level off, fly along definitely, and finally open your throttle to a point where you ought to get an abnormal rate of burn. You go along and you get one detonation. I use the word detonation because that expresses the idea; whether it carries along the scientific factors of detonation we do not know, because it is purely a question of degree. You might get one detonation, in 15 seconds another, and in a very short period of time your motor will be detonating completely, and you will have to come down. Once you get one detonation in the cylinder you immediately throw a large quantity of the heat of the explosion, by radiation of energy, into the cylinder walls and heat them. With the next compression it gets hotter, and you get more heat into your cooling waters; it gradually rises in temperature and you pass from a normal to an abnormal operation on an apparently slight change in the thermal condition of the motor.

We then made a search of various other chemical compounds, and found aniline had a similar effect. We did a great deal of work on

aniline and its kindred compounds. It took about 2 per cent of aniline to obtain the same results that 3 per cent of iodine gave.

There were many objections to aniline; the principal one was that it can not be obtained in quantities. We had been investigating a great many compounds and making a study of the physical chemistry of these problems, so that we might know what the factors were that we were dealing with. We tried one of the selenium metallo-organic compounds. We found that was an antiknock. We tried various other selenium compounds and tellurium compounds, and we finally took the atomic weights of the elements and went over the thing systematically. We found that while there are compounds which you can add to gasoline to stop its detonation, there are other compounds you can add that make it worse. If some surface above the top of this table be represented as zero, and if you put a pin to represent each element showing its value as an antiknock, the heads of the pins will lie on a warped surface, representing the antiknock potentialities of each element in its various valences.

These results tended to show that elements of high atomic weight were most effective as antiknocks, and almost as a last resort we started to study the properties of lead.

We tried for a long time to produce various organic lead compounds which would be soluble in gasoline. We did that without very much success, and finally, after a long period of time, we are able to get the tetraethyl lead compounds which are soluble in gasoline. When we tried those out we naturally had the factor of around 2 or 3 per cent in our minds, so when we got a small quantity of these we put it in a gasoline in the same proportion we had been dealing with. There was no indication of a knock. We kept diluting it and found that we were dealing with a material requiring only about one-thirteenth of 1 per cent. In other words, it was about forty or fifty times more effective than anything we had ever dealt with.

We then started a long series of road tests, after we had learned to mix small quantities of this material, and converted a few motors into the type of motor that could be operated with this fuel. We had a great many practical difficulties, due to the fact that the lead burns to lead oxide, and that, deposited on the spark plug, fuses; lead oxide being a good flux for the porcelain and electrodes of the spark plug, which are of nickel. We tried various ingredients with the lead compound and finally used the bromine compounds, ethyl dibromide. The lead burns to lead bromine, and it does not stick on the valve but passes out of the motor.

That is really the high-spot history of this study. Up to this time we have not done anything on the motor for the reason that we were repeating tests to determine whether we could take out of

the fuel the characteristics which prevented us from decreasing the space above the piston. We have gone back and checked and rechecked many times the mechanics of this thing.

Briefly stated, here is where the economic phase of the thing comes in. As you increase the compression you get a higher gain in efficiency at the partial loads or driving speeds of the motor, and it is possible for us to-day to build motors that will give us at least 50 per cent increase in efficiency, and I do not think it is at all out of the range of good engineering to double the economy of gasoline.

That is the problem which we are working at entirely from the economics of the situation, recognizing that to-day with the enormous increase in automobiles, we will use 12,000,000,000 gallons of gasoline this year and 15,000,000,000 next year, and at the increasing rate we have *got* to do one of two things: We must build motors which are more efficient—we must build motors of very much smaller size and sacrifice a great many factors which we now enjoy in the motor industry, or we must do something which will allow us to get more work out of the fuel unit. Now, in regard to the building of such motors, there is nothing of a patentable or unknown thing in the building of higher efficiency motors. Our neighbors on the other side a few years ago built high compression, relatively high efficiency motors, because we shipped to them a better grade of gasoline than we use in this country. They did not have tank wagons and, therefore, we shipped the gasoline over there in tins, and, with the increased cost, it made very little difference whether they bought gasoline of 2 or 3 or 4 cents lower grade or higher. Consequently, they use a higher grade of gasoline in our export machines, and a great many times we have had letters saying, "Why don't you go to Europe and buy European machines and bring them over here and try them out!" We have done that very consistently, and have never been able to drive them under American conditions with American gasoline.

Looking at it entirely from the economy standpoint, so far as our research goes in 10 to 12 years, we know of no way of getting increased efficiency other than changing the compression or redesigning motors from many standpoints. The automotive art to-day knows enough to design motors to take a better fuel, but it is handicapped because it has not been able to do it.

In the introduction of so-called ethyl gasoline on the market we recognize that there were many factors in its marketing that we did not know. We recognized that we would have to get a distribution method for fuel before changes in motor design would be effective.

That briefly states the history and purely economic phases of the situation. We have been interested in it from the motor industry

standpoint very largely, because we recognized that with the enormous demand for internal combustion-engine power some day we would have to answer this question, and we started a good many years ago with the idea purely of an elementary scientific problem to direct the general laboratory research to the problem of what we could do to modify our engines.

We found out that we could do nothing to modify engines unless we could do something to remove from the fuel a very important property, and that is why our research organization undertook the study of fuel relationships, to find out what that had to be, first, recognising that the changing of parts of the motor could easily be made after that problem was solved. I thank you very much.

The CHAIRMAN: I may relieve the minds of some of you by saying that we are having a verbatim report of the conference, which will be available as soon as practicable.

Before going into a general discussion I would like to ask if anyone else here has any facts to bring before the conference with reference to the manufacture of the tetraethyl lead compound. Mr. Edgar, are any of your people who are interested in the manufacture present? I have not picked out anyone in particular. We do not want general discussion just yet, but anything else you would like to explain with reference to it at this time.

MR. W. F. HARRINGTON

General manager, representing the E. I. du Pont de Nemours & Co.

Mr. Chairman, ladies, and gentlemen, I understand that what you want first is the question of information as to whether in our opinion tetraethyl lead can be manufactured safely.

The CHAIRMAN. We would like to have that.

Mr. HARRINGTON. I imagine this is the most important factor of discussion, and it is the manufacturing factor which I am prepared to discuss right now. The tetraethyl lead desired by the Ethyl Gasoline Corporation has been manufactured by the du Pont Co. We were called upon to manufacture, and we proceeded with the effort to determine a method of manufacture because at the time that this work was started no method of manufacture was well-known; the product was almost a laboratory curiosity. The research work had to be conducted in the laboratory and carried into the semiworks for further experience, and finally manufacture was started in the newly constructed plant. I am prepared to say now, after the experience that we have had in the last two years in the manufacture of tetraethyl lead by the ethyl chloride and the ethyl bromide processes, that tetraethyl lead can be safely and properly manufactured. I believe that I can also give sufficient evidence to

prove the correctness of such an assertion. We started out originally to manufacture tetraethyl lead by the ethyl-bromide process. We got into trouble. We did not have a background necessary to prevent some of the difficulties which are always incumbent upon manufacturing operations when going from the laboratory scale into plant scale of manufacture. We had fatalities. The last we had in the manufacture of tetraethyl lead by the ethyl-bromide process was in July, 1924.

Up to that time we had manufactured approximately 400,000 pounds of tetraethyl lead. Since that time in the plant we have manufactured something like one and three quarters million pounds of tetraethyl lead without any serious mishaps. The fact is that in this plant we have not even had any man very seriously sick, and yet we have had, as is always to be expected, certain mechanical mishaps, so-called messes, which are the result of mechanical failures and which have had to be house-cleaned. About a year ago it was realized that bromine had to be used with tetraethyl lead in making ethyl gas. There was not a sufficient supply of bromine in sight at that time to treat the ethyl gas. At about this time a process for the manufacture of tetraethyl lead via the ethyl chloride route was developed. This process seemed to be simpler than the ethyl-bromide process and attended with no more hazards of manufacture. Here again a long laboratory experimentation was carried out followed by long experimentation in the semiworks. A plant was then designed and constructed according to the most modern ideas as to industrial safety and ventilation. No expense was spared to insure safety of operations. However, we did err in our calculations in the design of this plant, with the result that difficulties were encountered when the plant was started and fatalities occurred. The plant was closed down, the difficulties in ventilation and operation were corrected and manufacture was resumed on March 25 of this year. Until the closing down on the first part of this month, when at the request of the Ethyl Gasoline Corporation the manufacture was discontinued, we have manufactured successfully some 50,000 pounds. No men at all in this plant, since we rectified errors and resumed operation in March, have shown any physiological symptoms of poison, so that I can say, and I think I can say with correctness and conviction, that tetraethyl lead can be safely manufactured. I say that for the du Pont Co., and I think that the du Pont Co. has a right to a conviction as to what can be done in the way of manufacture of dangerous chemicals. That has been the experience of the du Pont Co. almost through its whole period of existence—first, the manufacture of black powder, then the manufacture of dynamite, smokeless powders, detonators—all these products have been manufactured successfully. If

there is any question of doubt I refer you to the statistics. More recently we have manufactured organic chemicals also of a dangerous nature. Truly we have had a background in the manufacture of various chemicals which has been of inestimable assistance in assuring safe performance. We have, moreover, manufactured successfully such products as aniline, nitrobenzol, dinitrobenzol, nitrochlorbenzol, etc.

One seldom nowadays hears of an aniline poisoning case coming from a plant where aniline is manufactured. Nitrobenzol falls in the same class as a poisonous article. Dinitrobenzol is even worse, and nitrochlorobenzols, in my opinion, are still worse. We are successful manufacturers of every one of these products. We have no doubt at all from a manufacturing point of view that tetraethyl lead in proper hands, in the proper plant design, and under a proper discipline can be manufactured successfully.

The CHAIRMAN. Are there any further remarks on the manufacture of the compound? Before starting the discussion of any phase, I think it is better to develop the facts which we know. We have not a cut and dried program, but wish suggestions from anybody here who has any facts to present first to the conference as to the industrial hazard in the manufacture of the compound. If anybody has any suggestions as to change of program, we shall be glad to hear them.

The next thing logically is about the facts as to the mixing, distribution, and transportation of the substance from the wholesaler to the distributer of the compound. Has anybody anything to give to the conference with reference to that?

NOTE: The remaining 103 pages of the report have been omitted.

Defendant's Exhibit (GM) No. 262

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TREASURY DEPARTMENT
UNITED STATES PUBLIC HEALTH SERVICE

PUBLIC HEALTH BULLETIN No. 163
JUNE, 1926

THE USE OF TETRAETHYL LEAD GASOLINE IN ITS RELATION TO PUBLIC HEALTH

PREPARED BY DIRECTION OF THE SURGEON GENERAL

WASHINGTON
GOVERNMENT PRINTING OFFICE
1926

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INTRODUCTION

Early in 1923 lead tetraethyl began to be used in gasoline in an endeavor to increase the efficiency of the gasoline as a motor fuel. The possible danger from such wide distribution of a lead compound aroused fear on the part of those concerned with the public health, and these fears were intensified when fatal poisoning occurred in the manufacture and mixing of the concentrated tetraethyl lead itself in Deepwater, N. J., Dayton, Ohio, and Bayway, N. J. As a consequence of such apprehensions, the distribution of tetraethyl lead was stopped on May 5, 1925, and the sale of gasoline containing tetraethyl lead was thereby generally discontinued.

On May 20, 1925, a conference called by the Surgeon General of the Public Health Service met to consider the possible health hazards from the manufacture, distribution, and use of this lead compound as a substance to be added to gasoline. The proceedings of this conference have been published as Public Health Bulletin No. 158. Those in attendance generally recognised that the production and handling of the concentrated tetraethyl lead involved a distinct industrial hazard, and attention was principally focused on the question which remained open, as to the dangers to the public, automobile drivers, and garage workers, from the general use of lead-containing gasoline. Reports were made to the conference, of studies which had been conducted at three different places to elucidate this question—at the Bureau of Mines laboratory at Pittsburgh, reported by Dr. R. R. Sayers; at the department of industrial hygiene of Columbia University, New York City, by Dr. F. B. Flinn; and at the laboratory of the Ethyl Gasoline Corporation, Dayton, Ohio, by Dr. R. A. Kehoe. The studies at the first two of these institutions were experimental investigations on animals; the series at the Bureau of Mines showed no effect from the exhaust gases from an engine using gasoline containing tetraethyl lead in commercial proportions when the carbon monoxide was kept below 0.02 per cent, but prolonged exposure to unburned vapor containing 0.3 per cent of ethyl gasoline caused lead storage. The New York studies indicated storage of lead from skin application of 1:1,000 tetraethyl lead in gasoline, also from the inhalation of the fumes from such a dilution; but it was agreed by both sets of workers that no definite idea of the reality of the hazard could be obtained without human experience under practical working conditions. The studies at Dayton included human observations, but were not sufficient for conclusions to be drawn therefrom. After considerable discussion of the various

phases of the problem the conference adjourned, having agreed upon the following resolution:

It is the sense of this conference that the Surgeon General of the United States Public Health Service appoint a committee of seven recognized authorities in clinical medicine, physiology, and industrial hygiene to present to him, if possible by January 1 next, a statement as to the health hazard involved in the retail distribution and general use of tetraethyl lead gasoline motor fluid; and that this conference indorses as wise the decision of the Ethyl Gasoline Corporation to discontinue temporarily the sale of ethyl gasoline; that the investigation shall be paid for exclusively out of public funds; and that the results of this investigation shall be reported back to a public conference called for the purpose by the United States Public Health Service, at which labor shall be represented.

The Surgeon General appointed, as members of this committee, the following:

A. J. Chesley, M. D., St. Paul, Minn.
Executive health officer, Minnesota State Board of Health.

David L. Edsall, M. D., Boston, Mass.
Dean of the Medical School and of the School of Public Health, Harvard University. Formerly professor of clinical medicine at the University of Pennsylvania and at Harvard University.

William H. Howell, Ph. D., M. D., Baltimore, Md.
Professor of physiology, School of Hygiene and Public Health, Johns Hopkins University. Formerly professor of physiology at the University of Michigan and at Johns Hopkins Medical School.

Reid Hunt, M. D., Boston, Mass.
Professor of pharmacology, Medical School, Harvard University. Formerly professor of pharmacology, Hygienic Laboratory, United States Public Health Service.

Walter S. Leathers, M. D., Nashville, Tenn.
Professor of preventive medicine, Vanderbilt University. Formerly executive health officer, Mississippi State Board of Health.

Julius Stieglitz, Ph. D., Chicago, Ill.
Professor of chemistry, University of Chicago.

Charles-Edward Amory Winslow, M. S., New Haven, Conn.
Professor of public health, Medical School, Yale University. President, American Public Health Association.

This committee met on June 15 and organized, with Doctor Howell as chairman. L. R. Thompson, surgeon in charge of the office of industrial hygiene and sanitation of the United States Public Health Service, acted as the secretary to the committee. The general scope of the investigation was agreed upon, and at the second meeting of the committee, on June 29, 1925, J. P. Leake, surgeon, United States Public Health Service, was intrusted with direct charge of the investigation. On October 16, 1925, Doctor Leake reported to a meeting of the committee the results of the investigation up to that time; and on December 22, 1925, the committee met to consider the full report of the investigation by Doctor Leake. The last meeting of the committee was on January 17, 1926, when the final report of its findings were drafted and signed. This report (pp. 103-115 following the detailed report) summarizes the investigation and draws conclusions.

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INTRODUCTION

On January 19, 1926, a second public conference met at the call of the Surgeon General to hear the report of the committee. The following were in attendance:

American Federation of Labor:
A. J. Berres.
American Institute of Chemical Engineers:
H. E. Howe.
American Oil Co.:
John M. Klein.
Anglo American Oil Co.:
H. S. Tegnor.
Baltimore City Department of Health:
Dr. C. Hampson Jones, *Commissioner.*
F. A. Korff.
Bureau of Aeronautics, Navy Department:
Comdr. E. E. Wilson.
Bureau of Chemistry, Department of Agriculture:
Dr. Erich Schwartze.
Bureau of Mines, United States Department of Commerce:
Scott Turner, *Director.*
Dr. R. R. Sayers.
W. P. Yant.
A. T. Coumbe, jr.
Bureau of Standards, Department of Commerce:
H. K. Cummings.
Calco Chemical Co.:
A. R. Norton.
Chemical Warfare Service, United States War Department:
C. R. Alley.
Columbia University:
Frederick B. Flinn.
Detroit City Department of Health:
Henry F. Vaughn, *Commissioner.*
E. I. du Pont de Nemours & Co.:
W. F. Harrington.
Charles K. Weston.
Ethyl Gasoline Corporation:
E. W. Webb, *President.*
A. M. Maxwell.
Dr. Robert A. Kehoe.
Geological Survey, Department of Interior:
George Otis Smith, *Director.*
Harvard University:
Dr. Alice Hamilton.
Institute of Government Research:
J. A. Tobey.
Mellon Institute:
W. A. Gruse.
National Research Council:
Dr. Victor Vaughan.
Nation's Health:
Dr. F. L. Rector.
New York State Department of Health:
Dr. Augustus Wadsworth.

New Zealand Department of Health:
Doctor Watt, *Deputy Director General.*
Ohio State Department of Health:
Dr. John E. Monger.
Ohio State University:
Dr. E. R. Hayhurst.
Philadelphia City Department of Health:
Dr. William C. Robinson.
Society of Automotive Engineers:
Harry Horning, *President.*
Standard Oil Co. of Indiana:
Dr. Frank R. Morton.
R. J. Fellingham.
Standard Oil Co. of New Jersey:
F. A. Howard.
United States Public Health Service, Treasury Department:
Surg. Gen. H. S. Cumming, chairman of conference.
Asst. Surg. Gen. A. M. Stimson.
Surg. G. W. McCoy, director, Hygienic Laboratory.
Surg. J. P. Leake.
Surg. L. R. Thompson.
Workers' Health Bureau:
Mrs. Grace Burnham.

Doctors Howell, Chesley, Hunt, and Leathers of the committee were also in attendance. The report was read by the chairman of the committee and adopted unanimously by the conference. A resolution was also adopted expressing the sense of the conference that the investigation of industrial hazards in the United States should be concentrated in the United States Public Health Service, and the necessary funds be given that organization with which thoroughly to prosecute these investigations. A question was also raised as to whether the possible effect of tetraethyl lead gasoline on the sterility of the race was taken into consideration in the investigation. This was answered by Doctor Leake in a statement that questions in regard to sterility were asked of each individual in the investigation and there was no indication of any sterilizing effect caused by the exposure.

In accordance with the recommendations of the committee, suggested regulations were drawn up by the Public Health Service in regard to the manufacture, distribution, and use of tetraethyl lead and mixtures containing tetraethyl lead for adoption and enforcement by the several States. These proposed regulations form the final section of this bulletin. After having been submitted in draft to the departments of health of the several States they were presented at the Conference of State and Territorial Health Officers with the Surgeon General on May 25, 1926. It was there explained that the last set of regulations, concerning garages and inclosed filling stations, is directed chiefly toward protection against carbon monoxide poisoning. Helpful suggestions regarding this set of proposed regulations have been received from Prof. A. C. Willard, of the department of mechanical engineering, University of Illinois, but they are mainly based on observations made during this investigation.

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INVESTIGATION OF HEALTH HAZARD FROM TETRAETHYL LEAD GASOLINE

By JAMES P. LEAKE, LAWRENCE KOLB, LOUIS SCHWARTZ, GLEASON C. LAKE, CHARLES ARMSTRONG, and W. T. HARRISON, *Surgeons*, CLAUDE W. MITCHELL, *Passed Assistant Surgeon*, WILLIAM MANSFIELD CLARK, *Professor of Chemistry*, ELIAS ELVOVE, *Chemist*, C. G. REMSBURG, *Assistant Chemist*, CONRAD KINYOUN, *Assistant Bacteriologist*, J. J. BLOOMFIELD, *Assistant Physical Chemist*, WALLACE HALL, *Assistant Chemist*, and WILLIAM A. SIMKINS, *Junior Chemist*, *United States Public Health Service*

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NOTE: The text of the report entitled "Investigation of Health Hazard from Tetraethyl Lead Gasoline" is omitted.

REPORT OF COMMITTEE OF SEVEN RECOGNIZED AUTHORITIES APPOINTED BY THE SURGEON GENERAL OF THE UNITED STATES PUBLIC HEALTH SERVICE TO PRESENT A STATEMENT AS TO THE HEALTH HAZARD INVOLVED IN THE RETAIL DISTRIBUTION AND GENERAL USE OF TETRAETHYL LEAD GASOLINE MOTOR FUEL

By W. H. HOWELL, A. J. CHESLEY, DAVID L. EDSALL, REID HUNT, W. S. LEATHERS, JULIUS STIEGLITZ, C.-E. A. WINSLOW

JANUARY 17, 1926.

Surg. Gen. H. S. CUMMING,
United States Public Health Service,
Washington, D. C.

DEAR SIR: The committee appointed by you at the request of the conference held in Washington May 20, 1925, was directed to present to you, "if possible by January 1 next, a statement as to the health hazards involved in the retail distribution and general use of tetraethyl lead gasoline motor fuel." As soon as practicable after its appointment the committee met in your office for organization and for discussion of the procedure to be followed in carrying out its instructions.

The members of the committee familiarized themselves, as far as possible, by conferences and by reading, with the existing data bearing upon the subject and upon lead poisoning in general. They had access to the stenographic report (see Public Health Bulletin No. 158) of the addresses and discussions which took place at the conference of May 20, and subsequently they made a personal examination of the plant at Deepwater, N. J., for the manufacture of tetraethyl lead, and of one of the stations at which the ethyl fluid is mixed with gasoline.

Ethyl gasoline was first placed on sale February 1, 1923, and its sale was voluntarily discontinued May 5, 1925, about 300,000,000 gallons of ethyl gasoline being distributed during this period. Serious cases of poisoning occurred among men handling lead tetraethyl and ethyl fluid in the States of New Jersey and Ohio. As far as the committee is aware these accidents had all occurred in connection with the manufacture and blending of concentrated tetraethyl lead, and threw no direct light upon the problem specifically laid before us—that of the

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retail distribution and general use of ethyl gasoline. The valuable experiments reported by the United States Bureau of Mines and by investigators at Columbia University and others yielded important results, but we felt that the crucial test of the situation must be derived from actual experience in the use of ethyl gasoline under practical conditions of operation.

It was therefore decided that the committee should make a direct investigation of the question submitted to them, planning the work on as extensive a scale as was possible in the time allowed. Fortunately this mode of approach was made feasible by the fact that ethyl gasoline has been in constant use as a motor fuel in certain parts of Ohio for several years; and although the production and distribution of tetraethyl lead and ethyl fluid had been suspended by the voluntary action of the manufacturers, pending the present investigation, it was known that in the region indicated a supply of ethyl fluid was still in the hands of certain consumers and would be continued in use. We were thus presented with an opportunity of studying a fairly large group of individuals who had been using and handling ethyl gasoline and of comparing the findings upon them with the examination of a similar group employing gasoline free from lead.

In several conferences the committee, with the assistance of Surgeon General Cumming and Surg. L. R. Thompson, United States Public Health Service, in charge of the section of industrial hygiene and sanitation, formulated a general plan of investigation. The actual conduct of the work was intrusted to Dr. J. P. Leake, surgeon, United States Public Health Service, who at once organized a corps of workers and began observations upon certain groups of individuals in Dayton and Cincinnati. The committee desires to express its appreciation of the cordial cooperation extended to this group of observers by both the employers and workers in the garages selected for the investigations. After all the preliminary arrangements had been completed the work was pushed with great vigor during the autumn months, and on December 19 Doctor Leake presented to the committee a full report of the results of his study. The committee wishes to express its great satisfaction with the promptness, energy, and ability with which these investigations were carried out. The general character and scope of the work may be summarized briefly as follows:

Two hundred and fifty-two individuals were studied. They were all adult males and fall into five groups.

1. Group A, a control group, consisted of 36 men who were employees of the city of Dayton. Their duty was to drive cars during the working-day. In these cars the gasoline used contained no lead. The cars were housed in the municipal garage, which in the report is designated as the Dayton control garage.

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2. Group B, a test group, consisted of 77 men who were employees of a public-service corporation in Dayton and whose duties were similar to those of Group A. The cars that they drove, however, used ethyl gasoline, and this fuel had been in constant use in this service since July, 1923. The garage in which these cars were housed is designated as the Dayton test garage.

3. Group C, a control group, consisted of 21 men. These were employed as garage workers in the Dayton control garage or in a similar control garage in Cincinnati, or as gasoline fillers at service stations or on trucks delivering gasoline in Dayton and the adjoining region. In none of these garages, service stations, or trucks was gasoline containing lead used or handled.

4. Group D, a test group, consisted of 57 men. These were employed as garage workers in the Dayton test garage or in a similar test garage in Cincinnati, or as gasoline fillers at service stations, wholesale gasoline plants, or on trucks delivering gasoline in Dayton, Cincinnati, and vicinity. The duties of these men were similar to those of Group C except that ethyl gasoline was handled in the garages, stations, and trucks.

5. Group E, a control group, consisted of 61 men employed in two industrial plants of entirely different character from the foregoing, in which there was known to be a serious exposure to lead dust. Numerous cases of lead poisoning had occurred in these plants. This group was selected to serve for what might be called a positive control or check in regard to the validity of the clinical and analytical methods used in the study of the individuals of Groups A, B, C, and D.

Methods used.—Each individual was subjected to a careful clinical examination, and in addition smears were made from his blood and a specimen of his feces was collected. The blood smears and the fecal specimens were sent to Washington to be examined by trained experts for stippling of the red cells and for content in lead. The examination of the feces for lead was made by chemists who had been especially trained in the technique of the method. The blood examinations were made by a group of skilled observers and were arranged so that the counts in each case were checked by several workers.

The clinical examination was conducted by four physicians. The first of these took a careful industrial history of each subject and assigned to him a certain number. These numbers were taken at random. Thereafter this individual was recorded by his number, and none of those making the subsequent examinations or the laboratory tests know whether or not the individual had been exposed to ethyl gasoline; nor, in fact, did any examiner, except the one who took the industrial history, know to which group the individual belonged.

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After taking the industrial history other examiners made a thorough medical examination, including a medical history, hemoglobin estimation, red-cell count, blood-pressure records, visual acuity tests, urine examinations, etc., and finally a determination, by a special method devised for the occasion, of the muscular strength of the extensor and flexor muscles of the forearm.

While all of the examinations were made with as much care as possible, special attention was given to three methods which, it was hoped, would yield quantitative data of an objective character. These were, first, the determination of the amount of lead in the feces, as an index of lead ingestion or absorption; second, the estimation of the number of stippled red cells, which, in the absence of other causes, might also be considered as an index of lead absorption; third, measurements of the strength of the extensor muscles of the forearm, as an index of lead poisoning. The first two methods yielded results of positive value, but the last was practically negative so far as the present investigation is concerned.

When all the data had been collected, they were submitted to study and statistical analysis by Doctor Leake and his collaborators, and the results were presented to the committee in the form of a detailed report containing a description of the methods used, tabular summaries of results, and protocols of the findings for each individual studied. This report will be published in full by the Public Health Service.[1] So far as the clinical examinations are concerned, it may be said that they failed to give any decisive indication of lead posioning among the chauffeurs or workers in garages in which ethyl gasoline was used as a motor fuel. (Groups B and D.)[2]

The median time of potential exposure among these men approximated two years, and this negative result, therefore, holds good only for a period of this duration. It should be added that in Group E, comprising workers in industrial plants in which there was a known and serious exposure to lead dust, definite clinical symptoms of lead poisoning were revealed, although these workers had been exposed for shorter periods of time.

More significant results were obtained from the analysis of the feces and from the microscopic examination of the blood smears. These results are presented in condensed form in the accompanying graphs and tables. (Graphs 1 to 4 and Tables A, B, C, and D, pp. 112 to 115.)

Graph 1 and Table A represent the amount of lead found in the feces of the individuals of Groups A, B, C, D, and E. The figures along the abscissa of the graph give the amount of lead in milligrams

[1] Pp. 1-101 of this bulletin.

[2] The only injury observed was acute irritation of the eyes in a few cases, due to getting gasoline into the eyes. This occurred both with ordinary gasoline and with ethyl gasoline but was perhaps more severe in one case due to the latter. This case is mentioned specifically in the full report (pp. 15-16).

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per gram of ash of the feces, from 0.1 milligram to 3 milligrams. The ordinates represent percentages of the workers in each group. It will be seen that in Groups A and B, representing drivers of cars, one using gasoline without lead and the other the ethyl gasoline, the amount of lead in the feces was practically identical. The exposure of these men was mainly to the exhaust gas from the motors, and it would appear that in Group B, using the ethyl gasoline, there was no positive indication of increased absorption of lead. The fact that in Group A some lead was also found in the feces shows that these men were exposed to lead from some other undetermined source. In this connection it is to be noted that 20 examinations were made in Washington by the same methods of the feces of 10 of the workers in the Hygienic Laboratory of the United States Public Health Service. These workers had had no known exposures to lead, but their feces showed at each examination small amounts of lead ranging from 0.047 to 0.290 milligram per gram of ash of the feces. In what might be called normal feces, therefore, lead may be present, from accidental exposures of one kind or another, in concentrations not differing materially from those found in Groups A and B.

In Group C, representing the garage workers and gasoline handlers not exposed to ethyl gasoline, there is an indication of a slightly greater excretion of lead. In the control garages and repair shops, as will be shown later, there was a perceptible amount of lead in the dust upon the floors and benches.

In Group D, representing the garage workers and gasoline handlers using ethyl gasoline, there is a still further increase in the amount of lead excreted; although the number who showed excretion of as much as 0.3 milligram per gram of ash is small (15 per cent). It seems probable that this increase was due to the use of ethyl gasoline, since subdivision of this group into two classes—those with a lesser exposure to ethyl gasoline as regards time and intensity, D1 and 2, and those with a greater exposure, D3 and 4—indicates that in the latter there was greater excretion, as is shown in Graph 2 and Table B.

In Group E, as would be expected, there is evidence of much greater ingestion or absorption. Over 80 per cent showed more than 0.3 milligram of lead for each gram of ash of the feces, and in some cases the lead was present in concentrations as great as 3 milligrams per gram of ash.

Graph 3 (see Table C) gives curves indicating the number of stippled cells found in the blood of the workers in Groups A, B, C, D, and E. The abscissa in this case represents the number of definitely stippled cells per 100,000; the curves are plotted for the values 1 to 2 per 100,000, 3 to 6, 7 to 20, 21 to 100.

Here again the results for Groups A and B are practically identical. In each group a small number, 12 per cent, showed definite stippling.

No examinations of persons who are neither drivers of cars nor garage workers are available, carried out by the same observers using the same method. It is not possible to say whether the slight degree of stippling observed with Groups A and B possesses any significance, but it seems to be clear that the members of Group B, exposed to the exhaust gases from engines using ethyl gasoline, showed no noticeable increase in stippling as compared with Group A.

In Group C there is a distinct increase in the percentage of workers showing stippling, and this increase is more marked in the workers of Group D. These results, therefore, corroborate the findings from the analysis of the feces in suggesting a beginning storage of lead in these two groups. That the greater indicated storage in Group D is connected with the use of ethyl gasoline seems to be borne out by the curves shown in Graph 4 (Table D), in which the curves are plotted for the two classes of D referred to above, the workers with the greater exposure showing a very slight increase in the percentage of those exhibiting definite stippling. The curve for the workers in Group E is of an entirely different character. Over 90 per cent showed distinct stippling, and in most of these cases the stippling was relatively very abundant.

Inquiry into reported cases of injury resulting from the use of ethyl gasoline.—So far as the committee could ascertain, all the reported cases of fatalities and serious injuries in connection with the use of tetraethyl lead have occurred either in the process of manufacture of this substance or in the procedures of blending and ethylizing. It seemed desirable to institute an inquiry in the region where this investigation was made, and where ethyl gasoline had been employed as a motor fuel for the longest time, as to possible cases of injury resulting from its use. All the workers examined were questioned, therefore, in regard to their knowledge of cases of possible injury, and inquiries were made in the Dayton and Cincinnati districts among local health officers, physicians, public-health workers, and labor leaders. The few clues obtained from this inquiry were investigated in detail, but the results were negative. No positive evidence could be obtained of harmful effects attributable to the use of ethyl gasoline.

Observations upon the lead in the dust and air of the garages investigated and upon the amount of carbon monoxide.—In addition to the examinations made upon the workers themselves, some data were collected in regard to the amount of lead in the air and dust of the garages and workrooms, and also in regard to the concentration of carbon monoxide. These observations were made during October, 1925, and owing to the unusually cool weather prevailing during that month, the doors and windows were closed during most of the day. The conditions regarding ventilation were those to be expected for

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winter rather than summer weather. The several methods employed in this part of the investigation are given in detail in the full report.[3] The findings obtained are summarized in the accompanying tabular statements[4] for the several garages investigated as well as for an industrial plant in which there was a serious exposure to lead dusts. This part of the investigation was not so extensive as was desired, owing to the shortness of the time allowed, but it is evident from the results obtained that some lead was present in the air of the garages and workrooms whether the gasoline used contained lead or not; and in the sweepings of dust from the floors and benches there was a distinct amount of lead present, the figures running from 0.82 to 22.31 milligrams per gram of dust, according to the time and place of the gathering of the sample. It would seem probable, therefore, that in all garages in which automobiles are being handled and repaired the workers are constantly exposed to certain amounts of lead dust, and this fact would tend to emphasize the importance of providing such rooms with adequate ventilation and of keeping both the floors and the benches as free as possible from the accumulation of dust. Owing to the incompleteness of the data, it is not possible to say definitely whether the exposure to lead dust was greater in those garages in which ethyl gasoline was used. It is very desirable that these investigations should be continued.

On the basis of this investigation, the committee feels that the following general conclusions are justified:

1. Drivers of cars using ethyl gasoline as a fuel and in which the concentration of tetraethyl lead was not greater than 1 part to 1,300 parts by volume of gasoline showed no definite signs of lead absorption after exposures approximating two years.

2. Employees of garages engaged in the handling and repairing of automobiles and employees of automobile service stations may show evidence of lead absorption and storage, as indicated by the lead content of the feces and the appearance of stippled cells in the blood. In garages and stations in which ethyl gasoline was used the amount of apparent absorption and storage was somewhat increased, but the effect was slight in comparison with that shown by workers in other industries where there was a severe lead hazard (Group E) and for the periods of exposures studied was not sufficient to produce detectable symptoms of lead poisoning.

3. In the regions in which ethyl gasoline has been used to the greatest extent as a motor fuel for a period of between two and three years no definite cases have been discovered of recognizable lead poisoning or other disease resulting from the use of ethyl gasoline.

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[3] Pp. 31-68. [4] Tables 31-68, pp. 97-109.

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In view of these conclusions your committee begs to report that in their opinion there are at present no good grounds for prohibiting the use of ethyl gasoline of the composition specified as a motor fuel, provided that its distribution and use are controlled by proper regulations. The committee feels that the formulation of specific regulations in regard to the manufacture, distribution, and use of tetraethyl lead, ethyl fluid, and ethyl gasoline for adoption and enforcement by the several States belongs properly to the office of the Surgeon General of the Public Health Service. In an appendix to this report attention is called to certain suggestions which have been made in the course of the discussions of this committee and which it is believed should be taken into consideration in making such regulations.

In conclusion we beg to say that we are conscious of the fact that the conclusions to which we have come in this report, although based upon most careful and conscientious investigations, are subject to the criticism that they have been derived from the study of a relatively small number of individuals who were exposed to the effects of ethyl gasoline for a period of time comparatively brief when we consider the possibilities in connection with lead poisoning. A more extensive study was not possible on account of the limited time. It remains possible that, if the use of leaded gasolines becomes widespread, conditions may arise very different from those studied by us which would render its use more of a hazard than would appear to be the case from this investigation. Longer experience may show that even such slight storage of lead as was observed in these studies may lead eventually in susceptible individuals to recognizable lead poisoning or to chronic degenerative diseases of a less obvious character. In view of such possibilities the committee feels that the investigation begun under their direction must not be allowed to lapse. The respective States would be dependent upon the findings of such investigations for changes in their regulations. With the experience obtained and the exact methods now available, it should be possible to follow closely the outcome of a more extended use of this fuel and to determine whether or not it may constitute a menace to the health of the general public after prolonged use or under conditions not now foreseen.

Outside the question of ethyl gasoline it would seem from this investigation that wherever automobiles are housed together there is an accumulation of lead dust which may prove to be a source of danger to the workers involved, in addition to the hazards arising from the production of carbon monoxide gas. The vast increase in the number of automobiles throughout the country makes the study of all such questions a matter of real importance from the stand-

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point of public health, and the committee urges strongly that a suitable appropriation be requested from Congress for the continuance of these investigations under the supervision of the Surgeon General of the Public Health Service, and for a study of related problems connected with the use of motor fuels.

W. H. HOWELL, *Chairman.*
A. J. CHESLEY.
DAVID L. EDSALL.
REID HUNT.
W. S. LEATHERS.
JULIUS STIEGLITZ.
C.-E. A. WINSLOW.

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NOTE: The charts appended to the preceding report are omitted.

REGULATIONS PROPOSED FOLLOWING THE TETRAETHYL LEAD INVESTIGATION

These regulations have been formulated in accordance with the recommendations of the Surgeon General's committee, under whose direction the investigation into the hazards from tetraethyl lead gasoline was conducted. They are proposed for adoption by the several States in order to secure uniformity of control and were the subject of consideration at the meeting of the State and Territorial health authorities with the Surgeon General on May 25, 1926. These regulations are based upon present conditions and knowledge and it is appreciated that changes may be advisable from time to time.

By the term "tetraethyl lead" is meant the chemical substance $Pb(C_2H_5)_4$ of a commercial grade of purity or higher. Ethyl fluid is the concentrated commercial fluid containing tetraethyl lead and other ingredients, which is to be mixed with gasoline to make ethyl gasoline. The manufacture of ethyl fluid consists in adding these other ingredients to tetraethyl lead and is called "blending." The process of adding the ethyl fluid to gasoline to form ethyl gasoline is called "mixing." In the term "ethyl gasoline" as herein used are included all other motor fluids containing tetraethyl lead.

I. Proposed regulations for the manufacture of tetraethyl lead and the blending of the latter to make ethyl fluid.

II. Proposed regulations for mixing.

III. Proposed regulations for distribution of ethyl gasoline.

IV. Proposed regulations for automobile garages, repair shops, service stations, and filling stations.

Proposed Regulations for the Manufacture of Tetraethyl Lead and the Blending of the Latter to Make Ethyl Fluid

1. No person shall be employed without adequate instructions as to the nature of the hazard and the precautions to be taken.

2. Each worker shall have a periodical physical examination, which shall consist of such physical and other tests as are indicative of the absorption of tetraethyl lead and shall include, as a minimum, the following items:

(*a*) Examination of blood for stippling by carefully trained workers, using positive and negative controls, without knowledge of the source of the slides; this examination shall be once a week for the first three weeks and bimonthly thereafter.

(*b*) Semimonthly contact with plant physician for informal statement as to general health.

(*c*) Bimonthly weight, stripped.

(*d*) Bimonthly systolic and diastolic blood pressure estimation while sitting.

(*e*) Bimonthly hemoglobin estimation by Dare's hemoglobinometer.

Exact records of these examinations shall be kept, and persons showing gradually increasing amounts of stippling, sudden development of stippling, or other marked deviation from normal shall be promptly excluded from tetraethyl lead work, irrespective of whether or not such finding may be indicative of lead poisoning. All parts of the plants where lead in any form is used shall be subject to sanitary measures to prevent collection and dissemination of lead dust.

4. Separate ventilation systems shall be provided for the manufacturing apparatus and for the air of the rooms, the outlets of the latter being located near the floor of each room and all external inlets and outlets being so situated as to avoid dustiness and appreciable contamination of the air around the plant.

5. Daily inspection shall cover efficiency of ventilating systems, all joints, valves, and gaskets of manufacturing apparatus, and adequacy of pressure-hose respirators.

6. All containers of ethyl fluid or tetraethyl lead shall be labeled as to exact content and danger and shall conform to the regulations of the Interstate Commerce Commission. These containers shall be carefully tested for leaks and shall bear a plainly legible label stating that they are to be closed tight immediately when emptied, without cleansing, and sent back to the plant.

7. Kerosene or other material used for cleansing the used containers of ethyl fluid or tetraethyl lead shall be placed in the containers

by means of a closed system with air vents to outside air and with adequate ventilation.

8. The filling shall be performed by means of a closed system with air vent from the container to the outside air, and with adequate ventilation.

9. A dye shall be added to ethyl fluid in sufficient amount to give staining qualities to the ethyl gasoline to deter individuals from using it for cleansing or other similar purposes.

10. Reports shall be made monthly to the appropriate officer of the State concerned covering the following points:

Number of workers employed at beginning of month.
Number of workers employed at close of month.
Number of new workers.
Number of workers separated from tetraethyl lead work on account of results of examinations.
Number of definite cases of poisoning.
Condition of cases of poisoning previously reported so far as known.

Proposed Regulations for Mixing

1. The maximum content of tetraethyl lead in commercial ethyl gasoline shall be in the proportion of 1:1,260 by volume for commercial tetraethyl lead, or 1:1,300 for Pb $(C_2H_5)_4$ C. P.

2. Mixing ethyl fluid with gasoline except for certain specific requirements such as research, military and naval use, and air-mail service shall be done only at the main distribution centers and in not less than tank-car lots. Adequate provision shall be made at each such center for thorough mechanical distribution of the ethyl fluid throughout the gasoline, and the efficiency of such distribution shall be controlled by the analysis of samples.

3. The locations of these centers and the names of persons engaged in mixing shall be reported to the State department of health of the State of employment.

4. As few persons at each center as practicable shall be employed for this work.

5. No person shall be engaged for mixing until adequately instructed as to the mechanics of mixing, the dangers, and the precautions to be taken.

6. The distributor of ethyl fluid shall provide a special corps of adequately trained instructors and service men.

7. All mixing shall be done with the maximum ventilation practicable under weather conditions existing at the time.

8. Operation of the pumps shall be instantly stopped at the appearance of a leak or other defect, and no attempt shall be made to repair or disconnect the system until a qualified man takes personal charge of it.

9. Floors of all places where any possibility of spilling is present are to be provided with drains and proper facilities for making possible a complete flushing out of all spilled fluid, or in their absence provision shall be made for chemically neutralizing any spillage as it occurs.

10. No bulk mixing station shall be dismantled or disconnected for repairs except by a qualified man.

11. Kerosene or other efficient means of preventing skin absorption of tetraethyl lead and washing facilities shall always be conveniently available.

12. The rules and instructions affecting the employees shall be posted in a conspicuous place where the ethyl fluid is being handled.

13. The distributor of ethyl fluid shall, with the advice of the United States Public Health Service, select a representative group of at least 40 men exposed to the hazard of mixing, representing the entire area of distribution. This group shall serve as an index of the hazard of mixing. Monthly for the first three months and every

four months thereafter this group of employees shall have an examination, which shall consist of:

(a) Examination of blood for stippling, by carefully trained workers, using positive and negative controls, without knowledge of the source of the slides.

(b) Examination of fecal samples of lead.

(c) Report as to general state of health.

(d) Weight, stripped.

(e) Blood-pressure estimation, diastolic and systolic, when sitting.

(f) Hemoglobin estimation by Dare instrument.

Exact records of these examinations shall be kept.

14. The results of the examinations shall be reported promptly to the Surgeon General of the Public Health Service.

1892°—261——9

Proposed Regulations for Distribution of Ethyl Gasoline

1. Each filling station shall have prominently displayed at the pump, or in other conspicuous place, the following warning or one of similar effectiveness: "Ethyl gasoline containing tetraethyl lead, to be used as motor fuel only, and not for cleaning or any other purpose."

2. Suitable leaflets shall be available at all filling stations where ethyl gasoline is sold, for distribution on request. These leaflets shall describe the possible dangers and precautions to be taken in the use of ethyl gasoline.

3. Containers of ethyl gasoline sold to the general public shall be labeled: "Ethyl gasoline containing tetraethyl lead. To be used for motor fuel only, and not for cleaning or any other purpose."

7399

Proposed Regulations for Automobile Garages, Repair Shops, Service Stations and Filling Stations

1. Automobile garages or repair shops holding more than five cars and all inclosed public-service stations and inclosed filling stations for automobiles should be registered with the local health department.

2. In addition to doors and to window ventilation in summer, automobile garages, repair shops, inclosed service stations, and inclosed filling stations should have permanently operative ventilation at least equivalent to that given by an opening or openings at ceiling level free to the outside air, but protected from down drafts, with cross-section of 0.2 per cent of the floor space available for cars, together with an opening or openings for inlet near floor level of corresponding effectiveness, both arranged to give positive dilution of exhaust gases as generated. This is to be taken as a minimum, special conditions requiring greater permanent ventilation.

3. Automobile garages, repair shops, inclosed service stations, and inclosed filling stations should be kept reasonably clean and free from dust by means of flushing out and moist sweeping or vacuum cleaning.

4. Automobile garages, repair shops, service stations, and filling stations should keep conspicuously posted a copy of these regulations with the following statements in large type:

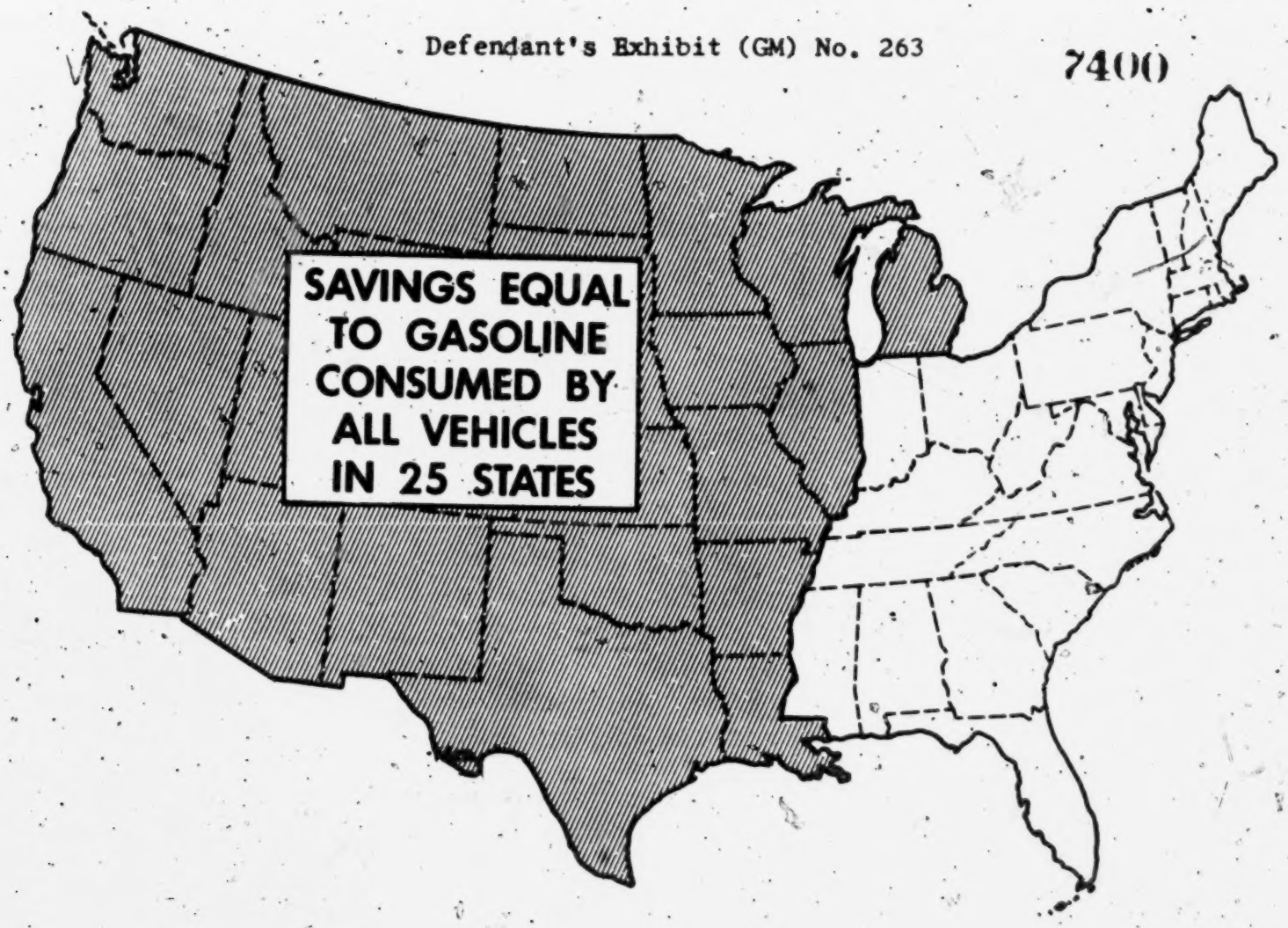
AUTOMOBILE EXHAUST GAS IS DANGEROUS. MOTORS SHOULD NOT RUN LONGER THAN 30 SECONDS UNLESS THE CAR IS IN MOTION OR THE EXHAUST IS DIRECTLY CONNECTED TO THE OUTSIDE AIR. LIQUIDS SOLD AS MOTOR FUEL, EXCEPT ORDINARY GASOLINE, SHOULD BE USED ONLY AS MOTOR FUEL, AND NOT FOR CLEANING OR OTHER PURPOSES. THE FUMES FROM THE EVAPORATION OF EVEN ORDINARY GASOLINE MAY BE INJURIOUS.

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5200

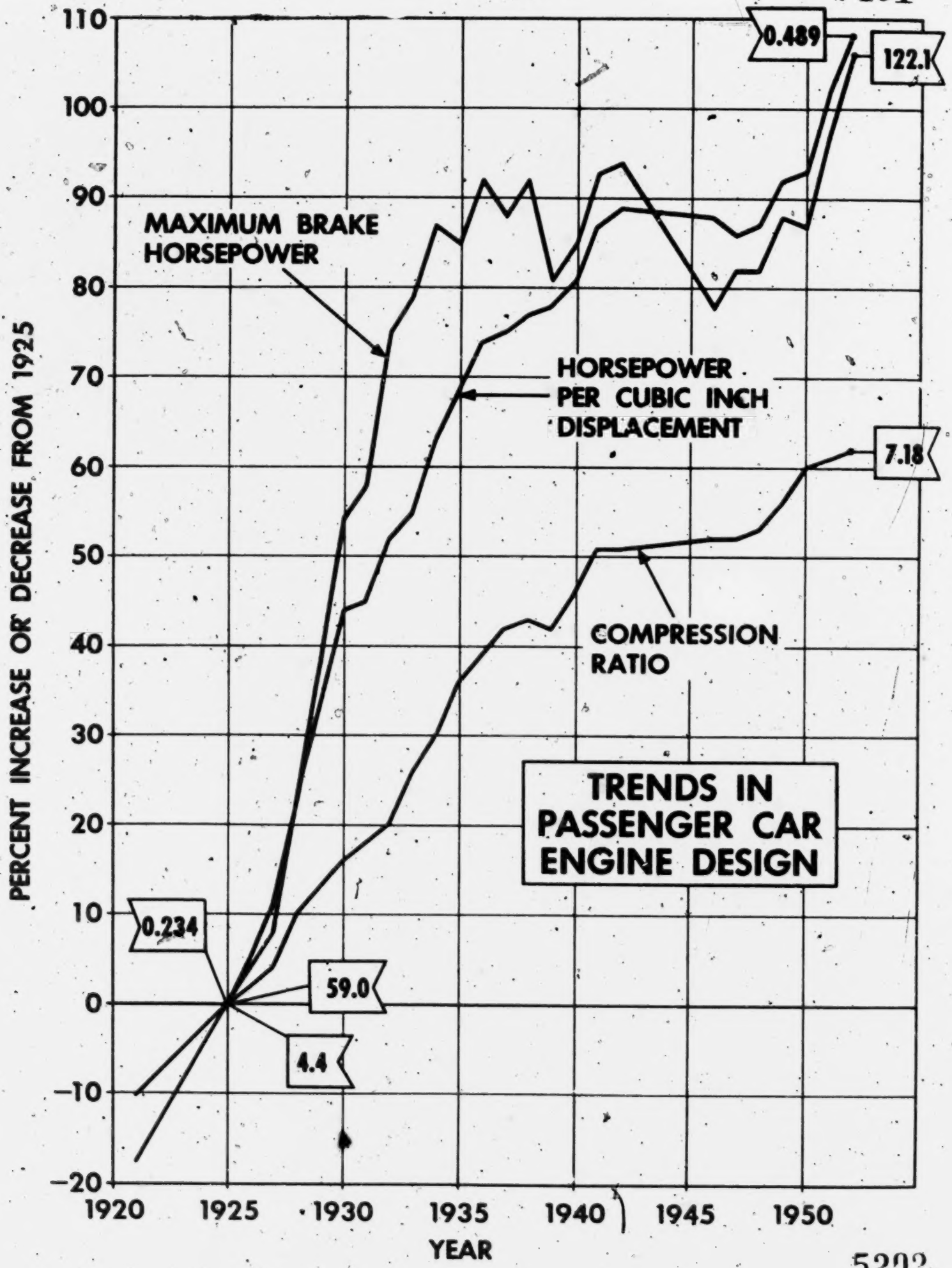
Defendant's Exhibit (GM) No. 263

7400



25 BILLION LESS GALLONS OF GASOLINE WILL BE USED IN 1952 THAN WOULD HAVE BEEN USED IN 1925 TO DO THE SAME WORK. AT 20 CENTS PER GALLON THIS REPRESENTS A SAVINGS OF 5 BILLION DOLLARS. THE COST OF TETRAETHYLLEAD USED IN 1952 IS ONLY ABOUT 250 MILLION DOLLARS.

5201


0.489
122.1
MAXIMUM BRAKE HORSEPOWER
HORSEPOWER PER CUBIC INCH DISPLACEMENT
7.18
COMPRESSION RATIO
TRENDS IN PASSENGER CAR ENGINE DESIGN
0.234
59.0
4.4
PERCENT INCREASE OR DECREASE FROM 1925
110
100
90
80
70
60
50
40
30
20
10
0
−10
−20
1920
1925
1930
1935
1940
1945
1950
YEAR

Defendant's Exhibit (GM) No. 267

7402

FACTORY CORRESPONDENCE

VERBAL ORDERS DON'T GO

June 19, 1922.

Mr. Clements:

Re: DuPont enamels.

Our exposure tests on the roof seem to indicate that the weakest links in the system of painting automobiles at present, are the color varnish and rubbing varnish. The rubbing varnish such as ordinarily used in finishing automobiles will crack in from one week to three weeks on our exposure test racks. The finishing varnish is supposed to protect the color varnish and rubbing varnish, but the cars which are in actual use show that this protection is not as much as it should be.

The DuPont enamels take the place of the color varnish and rubbing varnish. Their durability is very much greater than that of color varnish and rubbing varnish. We do not know what their durability will be, but the panels of DuPont enamel without protection of finishing varnish have been on the roof since March 27 and are still in excellent condition. We believe that by the use of DuPont enamels, we can increase the life of the finishing on painted automobiles so that will approximately the life of enameled jobs such as the Dodge.

We are also interested in DuPont enamels since it appears that by their use, we will be able to handle colors of all kinds with great speed. If the regular color varnishes are used with delicate colors it is necessary to either air dry the colors or dry them at such a low temperature that the drying schedule is very long, since the varnish darkens when exposed to high temperature.

The use of Du Pont enamels however, is still in the experimental stage and there are a number of factors which need developing.

1. Varnish materials must service the following purposes.

a. Primer coat.
b. Surfacing coats.
c. Coloring coats.
d. Rubbing coats.
e. Finishing coats.

a-1 At present the DuPont materials are not satisfactory for priming coats with the possible exception of priming coats on sand-blasted metal.

—2—

b-1 DuPont materials are not satisfactory for surfacing coats.

c-1 DuPont materials such as we have been testing are not satisfactory for color coats except in certain colors. In the case of the more transparent colors. DuPont enamels carrying larger amounts of pigment are required.

d-1 DuPont enamel seems to meet the requirements for the rubbing coats with the exception that it is very difficult to apply. The Buick Company have tried to finish several cars with DuPont enamels, but have failed in all of their attempts. The only cars finished with DuPont material that we are able to put on test at the Buick Plant, were those finished by Mr. Williams, a DuPont representative. The working properties of DuPont enamel should be improved.

e-1 Finishing coats. The DuPont material seems to have some properties such as durability and speed of drying which would make it very desirable for finishing coats, but up to the present time, a satisfactory appearance has not been obtained with DuPont material as the top coat.

The DuPont Company are showing considerable interest in this work, but since it is so new to them, it requires a great deal of work on their part. None of the DuPont men

who are actually engaged in this development work witnessed finishing of automobiles in production until this spring.

If it is possible to speed the development work of DuPont materials without reflecting upon the DuPont men who have been working hard on this problem, we believe it would be to the advantage of the General Motors.

H. C. MOUGEY

Defendant's Exhibit (GM) No. 267A

GENERAL MOTORS CORPORATION

7405

Meeting of Board of Directors

* * *

On motion duly made and unanimously carried it was

RESOLVED, that the merger of The Domestic Engineering Company and General Motors Corporation, involving the acquisition by General Motors Corporation of thirty-three thousand seventy (33,070) shares, being all the outstanding capital stock of The Domestic Engineering Company, a corporation of Ohio, with offices at Dayton in said State, in consideration of thirty-five thousand four hundred fifty-one (35,451) shares of the fully paid common capital stock of General Motors Corporation, be and the same hereby is ratified, approved and confirmed; and it is further

RESOLVED, that the said properties in the judgment of this Board are of the fair and reasonable value in excess of nine million dollars ($9,000,000), and are necessary for the purposes of General Motors Corporation; and it is further

RESOLVED, that the proper officers of the Corporation be and they hereby are authorized and empowered to issue and deliver thirty-five thousand four hundred fifty-one (35,451) shares of the fully paid common capital stock of General Motors Corporation with dividends thereon payable after September 30, 1919, in exchange for thirty-three thousand seventy (33,070)

5296

7406

shares of the capital stock of The Domestic Engineering Company, and to that end to do any and all things necessary or proper therefor.

On motion duly made and unanimously carried it was

RESOLVED, that the merger of The Dayton Metal Products Company, an Ohio corporation with offices at Dayton in said State, and General Motors Corporation involving the acquisition by General Motors Corporation of sixty thousand (60,000) shares, being all the outstanding capital stock of The Dayton Metal Products Company, in consideration of twenty-five thousand three hundred thirty-eight (25,338) shares of the 6% Debenture Stock of General Motors Corporation, Twenty-one thousand four hundred fifty-seven (21,457) shares of the Common Capital Stock of General Motors Corporation, and Ten Thousand (10,000) shares of the Capital Stock of The Dayton Securities Company, now owned by said Dayton Metal Products Company, be and the same hereby is ratified, approved and confirmed; and it is further

RESOLVED, that the said properties in the judgment of this Board are of the fair and reasonable value in excess of eight million five undred thousand dollars ($8,500,000), and are necessary for the purposes of General Motors Corporation; and it is further

5297

RESOLVED, that the proper officers of the Corporation be and they hereby are authorized and empowered to issue and deliver twenty-five thousand three hundred thirty-eight (23,338) fully paid shares of the 6% Debenture Stock of General Motors Corporation, twenty-one thousand four hundred fifty-seven (21,457) fully paid shares of the common capital stock of General Motors Corporation, and ten thousand (10,000) shares of the capital stock of The Dayton Securities Company, now owned by said Dayton Metal Products Company together with dividends on said General Motors stock payable after September 19, 1919, in exchange for sixty thousand (60,000) shares of the capital stock of The Dayton Metal Products Company, and to that end to do any and all things necessary or proper therefor.

On motion duly made and unanimously carried it was

RESOLVED, that the acquisition of the assets of The Dayton Wright Airplane Company, an Ohio corporation with offices at Dayton in said State, in consideration of ten thousand nine hundred sixty (10,960) shares of the fully paid six per cent (6%) debenture capital stock of General Motors Corporation, with dividends thereon after the 19th day of September, 1919, be and the same hereby is ratified, approved and confirmed; and it is further

7408

RESOLVED, that the said assets in the judgment of this Board are of the fair and reasonable value in excess of one million two hundred thousand dollars ($1,200,000) and are necessary for the purposes of General Motors Corporation; and it is further

RESOLVED, that the proper officers of the Corporation be and they hereby are authorized and empowered to issue and deliver ten thousand nine hundred sixty (10,960) shares of the fully paid six per cent (6%) debenture capital stock of General Motors Corporation, with dividends thereon payable after the 19th day of September, 1919, in exchange for the assets of The Dayton Wright Airplane Company, and to that end to do any and all things necessary or proper therefor.

Defendant's Exhibit (GM) No. 268

7409

June 15, 1926.

E. W. Webb.

Mr. J. N. Huff,
American Research Laboratories, Inc.,
Denver, Colorado.

Dear Mr. Huff:

Very glad to get your report on laboratory yield.

As I understood it you were not to make any definite commitment for equipment until after there had been the opinion by Mr. Morrison on the question of novelty, and therefore, I have not expected to receive the plans referred to in your letter of the 9th until after Morrison's opinion.

In other words, it was not intended that you should undergo any expense by way of preparation until there was to be performance of contract.

Mr. Morrison has not given me the slightest intimation as to what his decision will be. However, the forty days period is gradually drawing to a close and as soon as his decision is announced to us we will immediately communicate with you.

With best wishes,

Very truly yours,

EWW:GM

5219

Defendant's Exhibit (GM) No. 269

7410

Mr. Gilbert A. Currie,
Dow Chemical Company,
Midland, Mich.

June 15, 1926

Dear Mr. Currie:

You will recall my wiring you from Denver a few weeks ago asking you if you had any objection to my disclosing your tetraethyl lead process and my being advised it was entirely all right.

I showed a copy of your process to the people with whom I was negotiating in Denver, who apparently believed they had something new insofar as the Grignard process of manufacture is concerned, that is, they stated they knew of no literature on the subject and wanted to be sure that your patent did not conflict with their application.

I have made an arrangement with these people which might develop to the point of someone manufacturing tetraethyl lead by their process. A copy of their application is enclosed herewith, which you are at liberty to show to anyone in your organization whom you might think interested.

I would like to see you and your associates some time during the coming week, preferably Wednesday or Thursday, at Midland for the purpose of discussing this entire situation. Kindly wire me on receipt of this letter if either of these two days will be convenient for you. I mention both days because it is difficult for me to state just now which I can most conveniently make it. I have to be here on Tuesday and the work for that day might extend over into the next day.

Yours very truly,

5211

7411

NOTE: Stamp reading "Read by E. W. W. —, A. M. M. —, A. E. M. —" appears at top of page with handwritten "A" after A. E. M.

5212

Defendant's Exhibit (GM) No. 270 7412

June 30, 1926.

E. W. Webb

Mr. T. B. Huff, Secretary,
American Research Laboratories, Inc.,
Denver, Colorado.

Dear Mr. Huff:

Confirming our verbal understanding reached at Midland, Mich. last Friday, relative to the contract between us dated April 30th last, it is understood and agreed that the American Research Laboratories. Inc. and this corporation mutually consent to the cancellation of said agreement.

However, the American Research Laboratories, Inc. will permit our Dr. Calingaert to witness a demonstration of the production of tetraethyl lead under a process for which you have made application for letters patent, at such time as can be conveniently arranged, in your laboratory at Denver. It is also agreed that Dr. Calingaert will be fully advised as to the process of manufacture and given such figures or estimates on cost in connection with fairly substantial production as will enable him to make a report to us thereon.

It is further understood that Dr. Calingaert shall be given a like opportunity at the plant of the Dow Chemical Company at Midland, Mich. relative to that company's process for the manufacture of tetraethyl lead on a laboratory scale, it being strictly understood that Dr. Calingaert will not make any disclosures to the Dow Chemical Company or its representatives of information which you may disclose to him in connection with your process.

After Dr. Calingaert has observed these methods of manufacture on a laboratory scale, the understanding is he will report to us his findings and then we will conclude which, if either of them, shall be utilized by us for the manufacture of tetraethyl lead. If we should decide to adopt your method, then an agreeable royalty basis is to be worked out between us, which would permit us or our nominee to manufacture under said process. Needless to say, it is of prime importance to first ascertain whether your process has any advantages over those already known to us and we believe, as expressed by you in our last interview, this can best be done by following out the plan above outlined.

Mr. T. B. Huff —2— June 30, 1926

Will you kindly acknowledge this letter with the statement that it is in accord with your understanding, or, if it does not exactly state your recollection of our verbal agreement on the subject, please indicate accordingly so that there may be no misunderstanding between us.

I wish to again express to you my most hearty appreciation of the courtesy extended by you in coming on to Chicago to meet me to discuss this matter, and for the time and trouble which you devoted to it, and last but not least, the broad-minded way in which you treated it, which, in the long run, was unquestionably the only feasible way to handle it for reasons which were thoroughly discussed at our last meeting.

If you feel that a formal agreement should be entered into, executed by our respective companies under the corporate seals as was the contract itself, agreeing to its cancellation, we would appreciate it if you would have

such agreement prepared and executed and sent on here for execution by us.

With kindest regards,

Yours very truly,

NOTE: Stamp reading "Read by E. W. W. —, A. M. M. —, A. E. M. —" appears at top of page 1 with handwritten "A" after A. E. M.

Defendant's Exhibit (GM) No. 271 7415

American Serum Company

CLEAR ANTI-HOG CHOLERA SERUM
ANTI-HOG CHOLERA SERUM
HOG CHOLERA VIRUS
SWINE MIXED INFECTION BACTERIN
PLAGUE AGGRESSIN
HEMORRHAGIC SEPTICEMIA BACTERIN
[illegible]
VACCINATING INSTRUMENTS

Sioux City, Iowa
July 9th, 1926

Mr. E. W. Webb, Pres.,
Ethyl Gasoline Corp.,
25 Broadway,
New York, N. Y.

Dear Mr. Webb:

This to confirm the verbal understanding reached at Midland, Michigan, Friday June 25th, and which is set forth in your letter to us, June 30th.

We still feel the plan adopted in Michigan is the only feasible one, and we will be ready for Dr. Gallingaert, August first. We trust it will be possible for him to be in Denver on that date.

We do not believe it is necessary to enter into a formal agreement covering this matter. The verbal understanding confirmed by your letter to us and our letter to you, should be sufficient until our process is adopted.

With kindest personal regards, we are

Yours very truly,

AMERICAN RESEARCH LABORATORIES

BY I. B. Huff

ToH:GM

Thisanswer was Delayed 5215
Getting Confirmation from Denver

E

Defendant's Exhibit (GM) No. 272

7416

August 26, 1926.

E. W. Webb.

Mr. T. B. Huff, Secretary,
American Research Laboratories,
Denver, Colo.

Dear Mr. Huff:

I would have earlier replied to your letter of the 17th in regard to Dr. Calingaert's report, but for the fact that I have been away from the office all excepting one day since its receipt.

Dr. Calingaert sent a sample of the yield obtained under your process while in Denver to our Laboratory for analysis. Our Laboratory ran a very careful analysis with re-checking and found it to be 40% tetraethyl lead ($PbEt_4$) and 60% dye-lead hexaethyl (Pb_2Et_6) with the further report that such a mixture would not be usable at all for anti-knock purposes unless the latter compound could be converted into tetraethyl. This, he says, might be done but he is not prepared to make any definite statement in regard to it other than the fact that if it should be accomplished, it would most likely result in at least a 10% loss of yield: that is say, instead of a 90% there would most likely be an 80% yield.

From our present knowledge of the process for the manufacture of tetraethyl lead, we have every reason to believe that the ethyl chloride process is one with which your present process could not compete commercially on the basis of an 80% yield. Also, Dr. Calingaert has some doubt as to the possibility of the Grignard process being operated at the small labor charge which your associates think it can be done. He says he feels quite sure that they have not taken into account the skilled labor and medical supervision which would be absolutely essential in the operation.

7417

Under the circumstances, I feel that it would be quite premature for us to have a further meeting relative to a future contract, as it is quite obvious that we would not be interested in making an agreement for the purchase of a material of the character analyzed.

—2—

I wish to express on behalf of this company and myself our hearty appreciation for the manner in which this matter has been handled from your standpoint in regard to any negotiations with us.

With kind personal regards, I am

Very truly yours,

President.

ES

Address envelope to American Research Laboratories,
c/o American Serum Company,
Sioux City, Iowa.

Attention—Mr. T. B. Huff.

Defendant's Exhibit (GM) No. 273

7418

October 7, 1926.

E. W. Webb.

Harold H. Healy, Req.,
Lee, Loughbridge & Healy,
Foster Building,
Denver, Colorado.

Dear Mr. Healy:

My telegram of a few days ago to the American Research Laboratories indicated the reason for my apparent neglect in replying to your letter of September 1st. I assure you it was not intentional.

Our Laboratory has been exceedingly busy in matters which required immediate attention for the conduct of our business and there has been no opportunity on our part to do any laboratory work with the process which your clients worked for the benefit of our Dr. Calingaert, and we are therefore not in a position to state whether we agree with the yield of 80.4 as given in your letter, but Dr. Calingaert has expressed to me his best guess is that the conversion of the hexa-ethyl tetraethyl lead would probably reduce the yield to about 80%. However, he was unwilling to make a positive statement as to what would occur on distillation or conversion into tetraethyl lead from actual yield standpoint, but no matter what the yield, he says this further distillation involves additional expense and makes the process that much less attractive from a competitive standpoint to the Ethyl Chloride Process which is now being used quite successfully.

I believe that your client's process should be developed in the laboratory to the point of being able to state with certainty as to what the absolute tetraethyl yield is in such laboratory test. Of course, such a yield has no indication of what a commercial operation on a fairly large scale

would produce. I understand that there is quite some variation in many lines of chemical work between the yield as indicated in the laboratory and that which is finally produced in the plant. Nevertheless, it is quite enlightening as to what might be reasonably expected to be produced.

We would be very glad to analyze any samples of yield which might be developed in your laboratory and be apprised of what was done to get the result so that Dr. Calingaert could check it in connection with the other information which you gave him as to your process so as to arrive at some fair estimate of cost.

—2—

In this connection, I hope it is entirely proper for me to mention a matter which was called to my attention by Dr. Calingaert. He brought it up in such a way that I feel sure your laboratory men will not feel offended, but it is of real importance. He says that under no circumstances would our laboratory or the laboratories associated with us in the development of tetraethyl lead, handle tetraethyl lead in the manner in which it was being handled in the American Research Laboratories when he was out in Denver recently. He is quite surprised someone there hasn't become poisoned and says that in his opinion, if it is followed for any length of time your people will unquestionably have real trouble. He says that the handling of the tetraethyl lead in the open containers with very little regard for the noxious character of the fumes, will sooner or later cause trouble, and he earnestly requested me to admonish your people to exercise extraordinary care in the handling of this material, that you cannot be too careful. We have had some unhappy experiences, and if your people should unfortunately have even a fraction of it, they will appreciate these suggestions of ours relative to care. I wish to assure you also that we had these experiences despite the fact that the material was handled

in a more careful manner than that in which it was being handled when Dr. Calingaert was there. The difference was that ours was handled for a longer period of time and in larger quantities and it is still possible to get sufficient absorption in the small quantities that were being handled at the Denver Laboratory to cause lead poisoning. Therefore, please permit me to respectfully ask that you impress this phase of any further laboratory work upon your client.

With kindest regards,

Very truly yours,

President.

ES

Defendant's Exhibit (GM) No. 274 7421

April 21,1927

History of the Ethyl
Gasoline Corporation

Mr. William Benham
Dept. of Justice,
Washington, D. C.

Dear Sir:

In accordance with your request, I am giving you herewith statement of the history of the Ethyl Gasoline Corporation. I think this will be clearest if reduced to narrative form.

The foundation of this business was the research work conducted by Mr. Charles F. Kettering of Dayton, O., a director and officer of the General Motors Corp. and of several of its subsidiary companies. Mr. Kettering has been in general charge of the research work of the General Motors Corp. since a period antedating this development.

At some time prior to 1918, Mr. Kettering had made an analysis of the underlying principles governing the efficiency of internal-combustion engines, and arrived at the conclusion that the most hopeful method to work for increased efficiency was by increasing the compression of the engine.

It will be understood that in a standard type of engine, such as is used in automobiles, the mixture of gasoline vapor and air is drawn into the cylinder on the downward stroke of the piston. At or near the bottom of the piston stroke, the intake valve is closed, and the piston then proceeds on its upward stroke and compresses the explosive mixture of gasoline vapor and air. The highest pressure is reached when the piston is at the top of the stroke, at or about which time the spark occurs. In an ordinary engine the pressure generated by the piston itself before the spark occurs is in the neighborhood of 50 to 75 lbs. The smaller the "clearance volume" or space in the cylinder above the top of the piston when the latter is at the top of its stroke, the higher this pressure is. The pressure may, therefore, be increased simply by designing the cylinder to have a smaller clearance volume above the top of the piston, which entails no

5222

extra cost nor the addition of any extra parts.

Having determined that this increase of compression was the simplest and the best method of increasing the efficiency of the engine, Mr. Kettering next sought to find out exactly why higher pressures than were in common use could not be successfully employed, and this brought him to a study of the phenomenon known as "knocking". It had long been known that, when an automobile engine was operated with exceptionally high compression pressure, it would fail to run smoothly and quietly, and would suffer from violent, audible explosions, having a metallic sound. This sound is called a "knock" because it sounds just like some one was knocking on the piston with a hammer. When an engine begins to knock, the power falls off, and, if the knocking is permitted to continue, it becomes more and more aggravated and finally results in breaking the piston in extreme cases.

Altho this phenomenon was commonly known, there was no accurate information as to its cause and methods of controlling it. Mr. Kettering, after some years of study, found that the knock was due to irregular, or abnormal, combustion of the explosive mixture and that it was susceptible of being controlled, both to make it better or to make it worse, by changing the chemical nature of the fuel used. He was able to demonstrate that the minutest traces of ethyl iodide, for example, introduced into the air on its way to the carbureter by holding a handkerchief slightly moistened with the liquid ethyl iodide in front of the intake, would prevent this knock.

At this stage of his work Mr. Kettering caused the results to be published in certain scientific publications, and in that way they came to my attention. I immediately called on Mr. Kettering at his laboratories in Dayton, O., and became acquainted with him and his principal assistant Mr. Thomas Midgley, Jr., and from this visit received the impression that this research work constituted one of the most important lines of future progress in the petroleum field. This was in the latter part of 1918 or the early part of 1919.

In the fall of 1919, I entered the service of the Standard Oil Co. of New Jersey as Manager of Development for them, and was assigned the task of building up the research laboratories of the Company. One of my first steps in this work was to again get in touch with Mr. Kettering and Mr. Midgley and ask their advice on how best to proceed along the line of research in the field in which Mr. Kettering had pioneered. These gentleman

very generously gave me the benefit of much of their experience in this connection and actually supplied for the Standard Oil Co. of New Jersey, at cost to them, three experimental engines especially adapted for this work and some additional scientific equipment which they had devised. From this time on, the personnel of our laboratory, which was located at Bayway, N.J., kept in general touch with the personnel of Mr. Kettering's laboratory and exchanged views and information which it was thought would be mutually helpful. There was not on our part, and, so far as I know, not on the part of the General Motors Co., at that time any thought of any eventual business combination. We were simply following the practice, which is becoming increasingly common, of endeavoring to help one another in research work, as far as possible up to the point where a divergence of business interests intervenes. So far as I know, the Standard Oil Co. of New Jersey was the only oil company in the world which was at that time taking any interest in this line of research work or attempting to prosecute it, and we were able to, and did, give Mr. Kettering's laboratory a great deal of information of value to them in connection with the characteristics of gasoline and other petroleum products and the methods used in refining them; and in turn they helped us continuously on mechanical problems in arriving at a better understanding of engine operations.

The work was prosecuted independently in this manner until the spring of 1922. During this time both the General Motors and ourselves had discovered various substances which had more or less effect in the direction wanted, that is, preventing the knock, General Motors' discoveries being much more important than ours, but nothing of any apparent commercial value had been developed.

In 1922 I was advised by Mr. Midgley that they had discovered tetraethyl lead was marvelously effective for the purpose of preventing the knock. Less than 1/10th of 1% by volume of tetraethyl lead, added to gasoline, permitted the gasoline to be run successfully without knocking in an engine of substantially higher compression and higher efficiency than existing engines. Tetraethyl lead had been known, as a chemical curiosity, for some fifty years, at least, but had never been produced commercially or put to any practical use before. Mr. Midgley supplied me with a small sample of this product and we confirmed all of the marvelous results which were claimed for the product in our own laboratories.

My immediate responsibility to my own Company was to endeavor to determine what the commercial effect of

this discovery would be on our business. This led to an inquiry by our chemical research staff into the possibilities of commercially producing tetraethyl lead and the cost of its production. In the meantime, further experimental work in the engines with tetraethyl lead showed that after using gasoline containing the lead for any great length of time, mechanical difficulties were experienced with the engine, particularly with the spark-plug and the exhaust-valve. It was determined that this was due to the deposit of lead oxide at these points. Mr. Midgley confirmed the fact that the General Motors Co. had met with similar difficulties but stated that he had found a way of remedying the difficulties, the remedy being the addition of a small quantity of carbon tetrachloride to the gasoline. This was supposed to prevent the deposit of lead oxide.

At or about this time the General Motors Co., thru a subsidiary which was handling this business, actually began to sell the tetraethyl lead and the carbon tetrachloride mixture commercially, in a small way, in Dayton, Ohio, and the immediately contiguous territory. The lead mixture was packed in 1-qt. metal containers, which were arranged in a special fitting on the gasoline pump so that the required small percentage of the antiknock agent could be, at will, added to the gasoline dispended from the pump. The practice was to charge 3¢ per gallon extra for the gasoline treated with this antiknock agent. The sales were being made thru the Refiners Oil Co., an oil-jobbing concern which operated a number of service stations in Dayton and adjacent points. The product was very favorably received by the public from the very beginning. The General Motors Co. applied the arbitrary name ETHYL to the antiknock mixture, and the Refiners Oil Co. advertised the gasoline as ETHYL GASOLINE.

In the meantime, we had been prosecuting our chemical studies on the question of the possibility of commercially producing tetraethyl lead in large quantities and at a reasonable cost. We were advised that Dr. C. A. Kraus, then of Clark University, was the foremost chemical expert in this field of chemistry and we therefore retained him to assist us in that matter under a contract by which he agreed to assign to us any inventions which he might make in this field.

Dr. Kraus reported that the only known methods of producing tetraethyl lead involved the use of bromine compounds, that bromine was high in price and limited in quantity, and that it was doubtful whether a great commercial production could ever be obtained at any reasonable cost by these known processes. This advice confirm-

ing our own studies of the matter, we asked Dr.Kraus to seek to devise some new manufacturing process free from these objections. Within a short time Dr. Kraus advised us that he had devised a new method of manufacturing tetraethyl lead in which no bromine was used, but only the relatively cheap and abundant chlorine. Dr. Kraus immediately began to produce small quantities of t.e.l. for us by his new process, working in his laboratory at Clark University, with assistants provided by us. The quantities of lead so produced were sufficient for us to carry out very large scale commercial tests on the product in our own automotive equipment. These tests convinced us that, while the product had very great merit, the original difficulty had not been completely corrected by the addition of carbon tetrachloride, and for that reason it was not felt safe for us to adopt the product and attach our trade-mark to it for general sale. Altho the matter was discussed with the General Motors Co., we therefore decided that at the time we did not feel free to attempt to sell the product commercially under contract with them, the way the Refiners Oil Co. was proceeding, our feeling being that we would have complaints in such large numbers that the business would in the long run not be profitable. This was the status of the business in the spring of the year 1923. At that time the Standard Oil Co. of Indiana, which had become much interested in the product, thru the apparently successful sales thereof in territory immediately adjoining its own retail distributing territory, made a long term exclusive license contract with the General Motors Co. for the sale of ETHYL GASOLINE in the group of middle-western states in which the Standard Oil Co. of Indiana operated service stations.

At the outset the General Motors Co. had produced their entire output of t.e.l. in a small laboratory of their own at Dayton. When the requirements for the product began to be substantial, manufacture was taken up for them under a contract by the du Pont Co., at Wilmington, Del. The method of manufacture used was a modification of the process using bromine of which Dr. Kraus had first advised us, and the cost of production of the tetraethyl lead was very high.

The Standard Oil Co. of Indiana met with great success from the outset in the marketing of the ETHYL GASOLINE, but in their earliest sales efforts experienced the same difficulties which we had developed in our large-scale tests. Mr. Midgley again came to the rescue, however, with the discovery that bromine was much superior to chlorine as an agent to use for correcting the difficulties due to the lead. While this was a satisfactory technical solution of the problem, however,

it seemed to us that it was not a permanent commercial solution, since this would inevitably result in a double drain on the limited bromine resources of the world, that is, bromine in unprecedented quantities was to be required for the manufacture of the tetraethyl lead itself and further quantities of bromine for addition to the gasoline along with the lead in order to overcome the troubles which the straight lead developed. We therefore felt that our process for producing tetraethyl lead without the use of bromine was more valuable and more desirable than ever.

Altho the Sales Dept. of the Standard Oil Co. of New Jersey had not yet determined that it wished to attempt to sell the ETHYL GASOLINE, they were continuing to watch the commercial development of this product with care. In the early part of 1924 they made a careful investigation of the sales situation in the State of Ohio and reached the conclusion that the Standard Oil Co. of New Jersey should make a contract with the General Motors Co. for the sale of ETHYL GASOLINE. The Gulf Oil Co. had already closed such a contract, and one or two smaller concerns had likewise taken contracts. Negotiations were thereupon started with the General Motors Co., at first solely on the basis of taking a contract similar to the contracts that the Standard of Indiana, Gulf, and other companies had taken. Each of these contracts was an exclusive contract for a certain territory. The Standard of Indiana contract, which was the first large contract made had the longest term.

In connection with these negotiations, we took the occasion to remind the General Motors Co. that, in our opinion, they would not be able to meet the demand for the ETHYL product at any reasonable price, because of the shortage of bromine. We further assured them that we were in a position to manufacture t.e.l. for them by our chloride process cheaper than the du Pont Co. could make it by the bromine process, and that we would like to make some arrangement by which we could show an earning on our contribution to this whole development,

which was the process of manufacturing t.e.l. by chlorine. At this time they were not inclined to admit that any greatweight could be attached to our prognostications of a shortage of bromine, but were willing to discuss with us the question of manufacturing costs for t.e.l. by their process and our process. After some negotiations on this point, the suggestion developed, from which side I cannot now recall but my impression is that it was from the General Motors side, that the business was inherently of such a nature that it ought to have for its proper management the advantage of a very much better knowledge of the oil business than the General Motors possessed. The demand for the product seemed to have no limit, but all sorts of practical difficulties were arising in connection with the distribution, the form of contracts to be drawn, prices, relative merits of exclusive and non-exclusive agencies, and other business problems which were primarily problems of the oil industry. The discussions then turned to a still broader ground of common interest, which was the declaration by each side of its real basic interest in the proposition. This interest was the conservation of petroleum, with the end in view of assuring a continued supply of gasoline at a reasonable price in amounts adequate to meet any probable expansion of consumption. No single step could do so much toward producing this result as a thing which would permit one gallon of gasoline to do the work of a gallon and a half. This result it was demonstrated by Mr. Kettering could be very definitely and positively accomplished by the building of high-compression motors capable of operation only on ETHYL GASOLINE or product of the equivalent character. Such motors could not be built and distributed commercially until the gasoline which would run them properly was on sale and available practically every place in the U.S., and eventually everywhere in the world. To secure such world-wide distribution at retail of a new fuel in any reasonable time was a most serious problem. Until this result was obtained, the General Motors Co. would be in no position to realize its ultimate aim, and likewise the ultimate aim of the Standard Oil Co. of New Jersey in undertaking and prosecuting the research in question would be incapable of realization.

By the above course, therefore, the parties in the summer of 1924 arrived at the conclusion that the best interests of both would be served by joining forces to promote the universal sale and use of the new motor fuel as a step preparatory to an ultimate radical change in the type of automobile engine which would permit of an efficient and economical use of gasoline not now realizable.

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It appeared that the best way of accomplishing this desired union of effort was to have the two parties join in the organization of a corporation to conduct the new business. Accordingly, the Ethyl Gasoline Corporation was duly organized and succeeded to the existing business and became the exclusive licensee under the patents of the General Motors Co. and the Standard Oil Co. relating to these anti-knock compounds, their manufacture and use.

The original officers of the Corporation were:

Mr. C. F. Kettering (General Motors), President
Mr. F. A. Howard (Standard Oil Co.), 1st. V.P.
Mr. Thomas Midgley, Jr. (G.M.), 2nd V.P. and Gen'l.Mgr.
Mr. C. O. Swain (Standard), General Counsel
Mr. Donaldson Brown (G.M.), Treasurer
Mr. A. M. Maxwell (Standard), Sales Manager
Mr. A. E. Mittnacht (not previously affiliated with either company), Secretary

The directorate of the Ethyl Corp. included the gentlemen named, with the exception of Mr. Mittnacht, and also included Mr. A. P. Sloan, Jr., President of the General Motors Corp., and Mr. W. C. Teagle, President of the Standard Oil Co., of New Jersey, and other officers and directors of the General Motors Corp. and Standard Oil Co. in equal proportion.

The above narrative covers in considerable detail the origin of the Ethyl Gasoline Corp., first as a purely scientific research problem which had been carried out cooperatively to a considerable extent but without business relationship, or thought of business relationship, between the parties, and the subsequent commercial developments which led to the merger of the interests of the two in this matter in the Ethyl Gasoline Corp.

The subsequent history of the Ethyl Gasoline Corp. is, briefly, as follows:

The peculiar toxic properties of t.e.l. and the method of handling the business to avoid difficulties from this source constituted the principal problem to be met and have always been a controlling influence over all business policies. A thoro study of these toxic properties, made immediately upon the organization of the Ethyl Gasoline Corp., indicated the desirability of abandoning the existing method of distributing the ETHYL FLUID in small containers and the limitation of its sale and handling to

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barrel lots, which would be mixed with the gasoline when filling the tank wagons. This step cut down the hazard from commercial handling of the product enormously, by reducing the number of men who came in contact with it in the ratio of approximately 100 to 1.

One of the first steps undertaken upon the organization of the Ethyl Gasoline Corp. was an effort to determine immediately how best to commercially apply the Kraus process of manufacturing the material. The decision was made to erect an experimental, or pilot, plant at the Bayway Refinery of the Standard Oil Co. of New Jersey, which would serve as a means of determining the proper design and details of procedure to be used for large-scale commercial operations. This plant resulted in the tragical loss of the lives of five men and the illness of some thirty men who were employed there. This catastrophy received widespread notoriety, much of which was of a misleading nature, indicating that the poisoning had come from the gasoline itself rather than from the process of manufacturing the t.e.l. Certain newspapers undertook campaigns against the product and were supported by persons claiming to have particular scientific knowledge of the dangers attendant on its use. There was brought to light the fact that there had been previous fatalities at Dayton, O., in connection with the handling of the product by the General Motors Co., and in connection with its manufacture by the du Pont Co. at Wilmington, Del. All of this agitation resulted in the passage by the N.Y.C. Board of Health of a resolution banning the sale of ETHYL GASOLINE in New York City, and in various other jurisdictions orders were issued by local authorities discriminating against the product. As a result of this agitation, which centered on the statement that its sale was a menace to the public health, the Surgeon General of the U.S. called a conference of health officials and other interested persons in Washington for discussion of the problem. This conference passed a resolution requesting the Surgeon General to appoint a committee of scientists to investigate and report upon any possible danger to public health which might arise from the general sale of the ETHYL GASOLINE. Shortly before this conference, the Ethyl Gasoline Corp. announced that it had voluntarily suspended all commercial business, that is, ceased distribution of ETHYL FLUID. This suspension of business took effect in May of 1925 and was effective thruout the U.S. except in the State of Ohio, where arrangements were worked out, with the cooperation of all health authorities involved, for continuing limited distribution, to permit an adequate investigation to be carried out covering an actual commercial condition. Deliveries were also continued to the

U.S.Navy and to certain foreign governments, with the full approval of the authorities.

The report of the Surgeon General's Committee was presented in the early part of the year 1926, and was to the effect that there was no evidence of any danger to public health, and no reason to fear that any such danger would arise provided certain recommendations contained in the report were carried out. The principal recommendations made provided for elimination of the tank-wagon mixing method for ETHYL FLUID and the limitation of mixing to tank-car lots or greater, to be conducted under controlled conditions at refineries and other large bulk points, where a type of supervision similar to that employed in other chemical industries of a like nature could be maintained.

The Ethyl Corp. resumed business in the spring of 1926, adopting all recommendations made by the Investigation Committee, which in turn required the revision of existing contracts.

The business of the Corporation has been actively continued since that date and at the present time embraces practically the whole of the territory of the U.S. The manufacture of t.e.l. is being conducted by the du Pont Co. at Wilmington, Del., under contract with the Ethyl Corp. The du Pont Co. is utilizing in its manufacture the patented Kraus process.

Some few months after the organization of the Ethyl Corp., the temporary staff of officers was replaced by the present permanent staff.

The business of the Company is managed by its officers, under the supervision of the Board of Directors, acting thru an executive committee, consisting of Mr. A. P. Sloan, of the General Motors Co., Mr. F. A.Howard, of the Standard Oil Co. and Mr. E. W. Webb.

Unless some factor should appear not now foreseen, the expiration of the present Indiana exclusive contract will represent the end of all exclusive agencies for the sale of ETHYL GASOLINE, and the situation will be the same in all parts of the country, that is, the product will be available to as many different sales agents as can profitably sell the same to the advantage of the Ethyl Corp.

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Distribution of ETHYL GASOLINE at the present time is so widespread that it is hoped that the ultimate aim of the parties may be accomplished, thru the sale of high-compression motor cars, within the near future.

The following governmental agencies have had contact with the Ethyl Gasoline Corp. on various aspects of the matters referred to above, and are respectively in possession of the facts and/or have records which will be available for confirmation of many of the matters referred to:

1. U.S.Oil Conservation Board;
2. U.S.Bureau of Mines;
3. U.S.Bureau of Standards;
4. Office of the Surgeon General, Public Health Service.
5. U.S.Patent Office.

Whether it be pertinent to any inquiry as to the policies or conduct of the Ethyl Gasoline Corp. or not, it is a fact that the bona fide nature of the fundamental scientific contributions which have been made by those responsible for its history has been not only recognized by the grant of the patents referred to, but also by the award of prizes by the American Chemical Society to Mr. Midgley and to Dr. Kraus, the two inventors most intimately concerned with the origin of this business, for their respective contributions to science, upon which contributions the business is founded. The award to Mr. Midgley was made in 1923, and to Dr. Kraus in 1924.

To those of us who have had a part in this unique business development, the story has been such an interesting one that the temptation is to retail it at undue length. Even so, it is possible that I have omitted some essential facts which you will require for your report. If that is the case, please do not hesitate to call for any additional information, records, or documents which you require.

There is appended hereto, a list of the U.S.Patents which have already issued relating to this business and which the Ethyl Gasoline Corp. controls. A large number of additional applications for patents are on file and in due course will result in further patent protection for the business.

Yours very truly,

FRANK A.HOWARD

HV

enc.

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Appendix to letter to Mr. William Benham, April 21,1927.

74:32

GENERAL MOTORS U. S. PATENTS

Patent No.	Title	Date	Inventor
1,296,832	Fuel for Internal Combustion Engines	Mar. 11,1919	Thomas Midgley,Jr.
1,467,905	Hydrogenation Furnace	Sep. 11,1923	" "
1,446,984	Method of Revivifying Spent Catalysts & Apparatus Therefor	Feb. 27,1923	" "
1,578,201	Fuel	Mar. 23,1926	" "
1,605,663	Method and Means for Increasing Efficiency of Internal Combustion Engines.	Nov. 2,1926	Charles F.Kettering & Thom.Midgley,Jr.
1,573,846	Method and Means for Using Motor Fuels	Feb. 23,1926	Thomas Midgley,Jr.
1,575,436	Method and Means for Using Low Compression Fuels	Mar. 2,1926	" "
1,575,437	" " "	Mar. 2,1926	" "
1,575,439	" " "	Mar. 2,1926	" "
1,575,440	" " "	Mar. 2,1926	" "
1,575,441	" " "	Mar. 2,1926	" "
1,575,442	" " "	Mar. 2,1926	" "
1,575,443	" " "	Mar. 2,1926	" "
1,575,444	" " "	Mar. 2,1926	" "
1,567,159	Method for Producing Lead Compounds	Dec. 29,1925	Brian Mead

Appendix to letter to Mr. William Benham, April 21,1927.

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STANDARD OIL CO.(N.J.) U.S.PATENTS

Patent No.	Title	Date	Inventor
1,589,885	Motor Fuel & Internal Combustion Operation	June 22,1926	F.A.Howard
1,612,131	Making Metallo-Organic Compounds	Dec. 28,1926	Kraus & Callis
1,608,966	Vaporizer Control Devices	Nov. 9, 1926	McKenzie Martyn
1,623,053	Art of Controlling Combustion in Internal Combustion Engines	Apr. 5,1927	Howard & Wright

E

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cc—Mr. T. M. Nichols
Mr. J. E. Kupperian

E. I. du Pont de Nemours & Company
INCORPORATED
WILMINGTON, DELAWARE
ORGANIC CHEMICALS DEPARTMENT

July 2, 1936

Mr: E. W. Webb
Ethyl Gasoline Corporation
Chrysler Building
New York, N. Y.

Dear Mr. Webb:

We are now charging you 19¢ a 100 pounds, with an additional drumming charge of 50¢ a drum, for blending tetraethyl lead for your account under our agreement of May 29, 1930 and the supplement thereto of December 22, 1933.

We are happy to say that we find, on the basis of present operations in the blending plant and the handling of more than six million pounds of fluid per month, that we are able to operate more economically and, therefore, believe that we are justified in making a reduction in this charge from 19¢ as above mentioned to 11¢ a 100 pounds for bulk material, the drum charge of 50¢ being unchanged. All other conditions of our agreement will, of course, remain in effect.

As pointed out above, the new rate is based on present operating conditions and costs and will continue only so long as there is no change making a higher charge necessary.

If this is satisfactory to you, we will make the new rate of 11¢ effective beginning with our bill for July 1936.

Probably this letter will be sufficient for your records without rewriting the present agreement, but if you have any other thought, we shall be glad to draw a new agreement incorporating the change in rate.

Yours very truly,

CESARE PROTTO
Asst. General Manager

NOTE: At lower right is written "GMC-1014e"; an arrow is drawn diagonally upward from the address to the name of Mr. J. E. Kupperian; superimposed on the text of the letter is an illegible stamp; in the left margin an arrow is drawn from the first paragraph to the fourth; underlining is by hand; in lower left is written "Mr. Protto signed" followed by an illegible word or words.

Defendant's Exhibit (GM) No. 278

ETHYL GASOLINE CORPORATION

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CHRYSLER BUILDING
405 LEXINGTON AVENUE

NEW YORK February 6, 1928.

E. I. du Pont de Nemours & Company,
Wilmington,
Delaware.

Dear Sirs: Attention: Mr. J. C. Robinson
Dr. C. A. Ragenbeer

In line with the conversation of yesterday with Mr. Robinson, we hereby request you to erect, for our account, on our property at Baton Rouge, Louisiana, two (2) additional tetraethyl lead plants of the same size and capacity as those previously erected. The erection and operation of these plants is, of course, fully provided for under the terms of the agreement between our respective companies as of January 1st, 1926.

We also request you to construct, for our account, a plant for the production of metallic sodium at Baton Rouge, this plant to have a normal operating capacity of twenty million pounds of sodium per year. The increased capacity of this plant from the figure of ten million pounds per year mentioned in the agreement between our companies, will necessitate some supplemental agreement on the matter of guaranteed price and we will appreciate hearing from you on this point. There would appear to be no particular reason why the provision made in the existing contract for the guaranteed price should not apply to the twenty million pound plant as well as to a ten million pound plant, but the matter should be definitely covered.

We are desirous of having you construct, for our account, a plant at Baton Rouge for the manufacture of ethyl chloride. There is, of course, no provision in the present contract covering either the construction or operation of such a plant, but we feel that it is to the best interest of both companies that such a plant be built. Apparently the type of plant to be built would be one in which hydrochloric acid is produced by burning hydrogen and chlorine and the ethyl chloride made by your process. The capacity of this plant is perhaps still open to discussion. To be in balance with the lead and sodium plants, it would appear that a unit should be built adequate to consume all of the chlorine produced at the above-mentioned sodium plant. On the other hand, it may not be necessary to invest the entire amount of capital for this project at this time if the capacity is available at existing plants. Certainly, enough ethyl chloride on the most favorable economic basis should be in sight to operate all tetraethyl lead plants by the time they are completed.

We will appreciate hearing from you on this point both as to the question of the supplemental contract covering the erection and operation of ethyl chloride plants and also as to the available capacity of ethyl chloride, time necessary to erect ethyl chloride units of this type, and any other pertinent information.

As we feel that this expansion program cannot afford any unnecessary delay, we will very much appreciate your giving same prompt consideration.

Very truly yours,

AsH

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Defendant's Exhibit (GM) No. 279

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THE DOW CHEMICAL COMPANY

RESEARCH REPORT

LEAD TETRAETHYL PROCESS

By

E. C. Britton

UNLESS SPECIAL PERMISSION IS OBTAINED, THIS REPORT MAY NOT BE REMOVED FROM THE ORGANIC LABORATORY OFFICE AT ANY TIME

ORGANIC RESEARCH LABORATORY

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Issued to E. C. Britton

THE DOW CHEMICAL COMPANY

RESEARCH REPORT

Report No. 316 November 18, 1924

Lead Tetraethyl Process

by

Dr. E. C. Britton

Copies issued to

H. H. Dow
E. O. Barstow
I. F. Harlow
E. C. Britton

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Lead Tetraethyl Process

I.

A. Ethyl bromide, one mole, is added to magnesium shavings, one mole, and ether, forming ethyl magnesium halide.

(1) $C_2H_5Br + Mg = C_2H_5MgBr$

B. Lead chloride, one mole, dry and powdered, is then added to the ether solution of ethyl magnesium bromide, forming lead diethyl.

(2) $2\,C_2H_5MgBr + PbCl_2 = Pb(C_2H_5)_2 + MgCl_2 + MgBr_2$

C. By adding toluene to the reaction mixture and heating to distill off ether, thereby raising the temperature to 90°-100° C., the lead diethyl is decomposed to lead tetraethyl.

(3) $2(C_2H_5)_2\,Pb = Pb(C_2H_5)_4 + Pb$

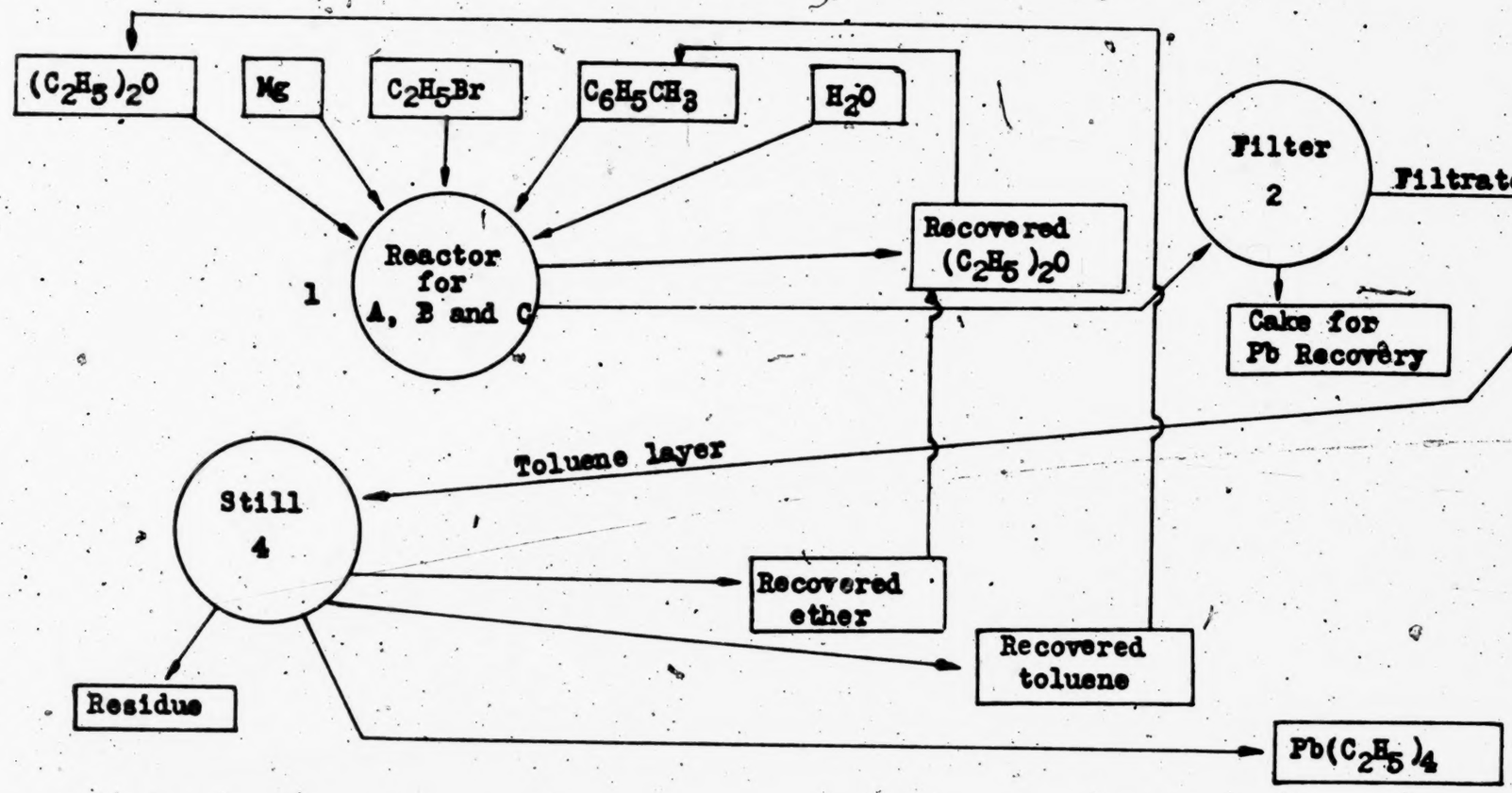
This reaction takes place at as low temperature as 35° C. but for completion of reaction a higher temperature, as indicated, is necessary.

D. The reaction mixture is now treated with water and acidified. After acidification, it is filtered and then the toluene, ether layer of lead tetraethyl is separated and fractionated by distillation, thereby obtaining pure lead tetraethyl.

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II.

Flow Sheet



Reactor 1 is for the portion of the reaction represented in I by A, B, and C portions.

Filter 2, separator 3, and still 4, are used for working up the reaction product as outlined in portion D of I.

III.

Raw Materials	By Products	Products	Waste Product	Packages
Ether	Metallic	Lead	Still	Drums
Toluene	Lead	tetra-	Residue	
Magnesium		ethyl		
Ethyl Bromide	Magnesium	65-70 %		
Lead Chloride	Bromide	Yield		

IV.

A, B, & C.

Our equipment for this reaction and the subsequent reactions, B & C, was a ten gallon Dopp provided with a stirrer that scraped the sides of the jacket and running at about 40 R.P.M. There was a 1 1/2 inch pipe rising to the iron condenser and returning through a U to the still. The lead chloride was added through a funnel on the bottom of which was a 1-1/4 inch butterfly valve.

In this reaction the procedure was as follows:—One pound of magnesium shavings were placed in the still along with five pounds of ether and a crystal of iodine. To this, cooled and stirred as much as possible, was added one-half pound of ethyl bromide. The reaction of the ethyl bromide and magnesium proceeded at once and generally caused the ether to boil. After this initial reaction was over, a mixture of 3 pounds 12 ounces of ethyl bromide and 4 pounds

of ether was added in about twenty to thirty minutes, this amount of ethyl bromide completing the formation of the theoretical amount of ethyl magnesium bromide. (Temperature of 40° C.) Ten pounds of toluene was then rapidly added to the reaction mixture and then five pounds of dry, powdered, technical lead chloride was added in fifteen minutes. (Temperature of 40° C.) The reaction mixture was then refluxed (temperature 67°-70° C.) for twenty minutes, following which the ether was distilled off or rather temperature was raised to 90°-95° C. still temperature. The mass was then refluxed during three hours heating. This procedure furnishes reactions A, B, & C.

D

The reaction product, a grayish black spongy mass, after cooling to 50° C., was treated with ice and stirred. The whole then became liquid and was drawn off into a crock. One then acidified to *Congo* red reaction, about one and one-half pounds of 30% HCl being required, and the mass was filtered. The filtrate was then put in a separator and allowed to settle thoroughly. After complete separation, the upper toluol layer was removed and subjected to fractional distillation under vacuum. The ether remaining passes over first at low temperature, the toluene at 40° C. (28 1/4 inch vacuum) and the lead tetraethyl at 100° ±. (28 1/4 inch vacuum), leaving a yellow residue (25 g.) in the flask. The amount of distilled lead tetraethyl obtained was about 870 grams.

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The operation of this Grignard reaction is dependent on the observance of several precautions as in all Grignard reactions. The magnesium should be in the form of thin shavings, and should be clean. The ether used should be of high purity, free as possible from aldehyde and acid and entirely free from alcohol and water. The reflux condenser must supply ample cooling in order not to lose ether. As a general rule in running Grignard reactions, the shorter the time of forming the magnesium compounds, the better yield one can obtain.

Much can be said in regard to agitation. Our agitator did not run fast enough to beat up the mixture and it is certain that this is necessary, for one mixes insoluble lead chloride with the soluble ethyl magnesium bromide and the reaction is entirely a surface reaction, which necessitates violent stirring. A turbine agitator is of no value for the lead chloride is too heavy, but a good propeller agitator with some mechanism for scraping the sides of the reactor would be ideal. Naturally no coils can be placed inside the reactor since material will lodge on these coils and stay there without mixing.

For the highest yields by this method of synthesis, purity of reacting materials in forming the magnesium compound is most important. Our experiments in this line have confirmed this,—impure ether will absolutely stop the Grignard reaction as will impure ethyl-bromide, presence of alcohol, water, and a trace of acid, giving the most trouble.

We carried out two experiments using ethyl chloride, but experienced great trouble in getting the Grignard reaction to start, due to a mere trace of alcohol and acid in the ethyl

chloride. It was found, however, that by using ethyl bromide to start the reaction, ethyl chloride reacts rapidly enough to be used without trouble.

V.

Physical Properties

Substance	State	Weight per Unit	B.P. or M.P.	Combustibility	Poisonous	Specific Heat	Latent Heat	Solubility in H_2O	Mol. Wt.
Mg	Solid			Yes	No	.50		Reacts slowly with hot water	24.32
Ether	Liquid	6 # per gal.	35°C.	Yes	Anaesthetic	.504	Kg.Cal/Kg. 88.39		74.08
Ethyl Bromide	Liquid	1.498 sp. gr.	B.P. 38.4°C.	Yes, but not great.	Yes and Anaesthetic	0.2164	61.65		109.00
Ethyl Chloride	Liquid	.0214 sp. gr.	B.P. 13.1₂C.	Yes, but not great	Yes, and Anaesthetic	.4276	83.07		64.49
Toluene	Liquid	0.8659 sp. gr.	110.31	Yes	Yes	0.4400	Kg.Cal/mol. 7.90		92.06
Lead Tetraethyl	Liquid	1.62 sp. gr.	1	yes	Yes, very	?	?		323

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7445

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Chemical Properties

Substance	Acidity	Stability	Reaction with Construction Materials	Reaction with Chemicals Peculiarity
Magnesium	No	Stable	None	Reacts with water and oxygen at slightly elevated temperatures.
Ether	No	Not extremely stable to light and air.	None	In presence of light and air, ether undergoes changes to form aldehydes, acetic acid and peroxide.
Ethyl Bromide	No	Yes	None	Hydrolyzed by NaOH solution.
Ethyl Chloride	Very slight, if any.	Yes	None	Acts as ethyl bromide but not so rapdily in any case.
Toluene	No	Stable	None	
Lead Chloride	No	Stable	None	

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VI.

This plant is peculiarly fitted to attempt the Grignard synthesis of lead tetraethyl.

In the first place this plant produces magnesium and does it fairly cheaply.

Second:—By a simple modification of temperature the ethylene plant can produce ether very readily and in good yield.

Third:—This plant can manufacture ethyl bromide or ethyl chloride.

Fourth:—The chlorine for lead chloride is produced here and lead chloride can be produced cheaply.

Fifth:—If a process involving bromine recovery were used, the Dow Chemical Company could do it better than anyone.

These points can still further be strengthened by the fact that our organization knows how to run the Grignard reaction.

VII.

Naturally the capacity of the plant for making lead tetraethyl is problematic at present.

VIII.

Ether:—Freshly distilled without alcohol or water being present. U.S.P. ether minus the alcohol, when fresh is very good.

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Toluene—Chemically pure.
Packages—Tin lined drums.

IX.

The literature on the manufacture or rather preparation of lead tetraethyl and related compounds starts in the early history of organic chemistry.

X The three methods used for its preparation are, (1) the action of an ethyl halide and sodium lead alloy, (2) the action of zinc ethyl and lead chloride, and (3) the action of ethyl magnesium bromide or iodide on lead chloride.

The first of these methods is reported by Ghira (G. 24 I, 44 (1894)) and by Cahours (Ann. 122, 65 (1862). The only comment of these authors is that the process does not work very well and the product obtained is not very pure.

The second of these methods is reported by Buckton (Ann. 109, 222 (1859); 112,226 (1859)) and Frankland & Lawrence (J.C.S. 35,244 (1879)). They report a very good product and a reaction easily carried out. Frankland and Lawrence purified by steam distillation.

The Grignard method of procedure was first used by Pfeiffer and Truskier (B. 37, 1127 (1904)), who reacted magnesium, ethyl iodide, and lead chloride in ether solution to form lead tetraethyl which decomposed on distillation, producing metallic lead. In order to prevent this decomposition, the triethyl lead chloride was prepared.

Grüttner and Krause, B. 49, 1415 (1916) prepared lead tetraethyl as a distilled product by this reaction and could obtain but 85 gms. of pure lead tetraethyl from 300 gms.

of ethyl magnesium bromide and 300 gms. of lead chloride; a yield of 38 per cent on lead chloride.

—11—

Laboratory and Small Scale Results

There was very little laboratory work carried out on this reaction, practically all being conducted in the ten-gallon Dopp as mentioned above. We used the larger apparatus because we needed good cooling in the reflux condenser and better stirring than in the laboratory and also wanted to test the use of iron as material for construction.

Run No.	Initial Charge Mg	EtBr	Et_2O	Time	Temp.	Mixture EtBr	Et_2O	Time	Temp.	Addition Wt.	Time	Temp.	Addition Wt.	Time	Temp.
1	3 lb. 13 oz.	10 lb.	2lb.	—	—	15 lb.	15 lb.	—	—	None	—	—	20 lb.	—	—
2	1 lb.	1	4	—	—	3-¼	4	—	—	"	—	—	5	—	—
3	1 lb.	1	7	9:45	—	3-¼	3-¼	10:55 11:10	—	"	—	—	5	—	—
4	1	1	7	9:00–9:10	—	3-¼	3-¼	9:45–10:10	—	10 lb.	3:00–3:15	80°C.	5	10:25 10:50	—
5	1	1	4	9:20–9:35	—	3-¼	3-¼	9:55 10:20	—	10#	3:00–3:55	82°C.	6-¼# $PbBr_2$	10:45–10:55	—
6	1	1	4	10:30–10:45	—	3-¼	5	11:00–11:15	—	10 Recov.	3:00–3:30	97°C.	6-¼# $PbBr_2$	11:35–11:50	38°C
7	1	1	5	10:15–10:40	38°C.	3-¼	4	10:45–11:00	39°C.	10 Recov.	2:00–2:25	67°C.	5 #	11:10–11:30	34.5° C.
8	1	1	5	10:30–10:50	38°C.	3-¼	4	11:05–11:25	40°	10 Pure	11:45–11:55	68°C.	5 #	12:20–12:30	61°C
9	1	1	5	10:10–10:25	36°C.	3-¼	4	10:30–10:50	41°	10 Pure	11:00–11:15	42°C.	5 #	11:15–11:25	47°C
10	1	8 oz.	5	8:30–8:45	—	3-¾	4	8:55–9:20	41°	10 Pure	9:25–9:45	43°C.	5 #	9:50–10:00	49°C
11	1	8 oz	5	9:30–9:50	35°C.	3-¾	4	10:00 10:20	35°	10 Pure	10:30–10:45	43–45°C.	5 #	10:50–11:00	45–48°C
13	1	6 oz. Et Cl	5 #	8:30–8:45	32°C.	2 lb. 5 oz.	4 #	10:00 10:25	32°	12 Pure	10:40–10:50	36°C.	5 #	10:50–11:00	37°C
14	1	6 oz. Et Cl	5 #	8:30–8:45	31°C.	2 lb.	4 #	10:25–10:45	31°	12 Pure	10:45–10:55	32–38	5 #	11:00–11:10	38°–40°C.

Run No.	Distillation of Ether: Rec. Et_2O	Distillation of Ether: Time	Distillation of Ether: Temp. C.	Reflux: Time	Reflux: Temp. C.	Draw-Off: Time	Acid: Weight	$Pb(C_2H_5)_4$: Crude	$Pb(C_2H_5)_4$: Distilled	Per Cent Yield: On Mag	Per Cent Yield: On EtBr	Per Cent Yield: On $PbCl_2$
1	0	—	—	—	—	—	—	4 lb. 3 oz.				
2	0	—	—	—	—	—	—	545 gm.				
3	0	—	—	—	—	—	—	—	545 gm.			
4	0	—	—	11:10 AM-3:00 PM	40°	4:45 PM	—	818 gm.	612 gm.			
5	0	—	—	11:05 AM-3:00 PM	46°	4:30-4:55	—	672 gm.	654 gm.	43.4	45.6	52.3
6	7 lb. 4 oz.	—	—	12:00-3:00 PM	—	—	—	925 gm.	864 gm.	57.4	60.55	65.6
7	5 lb.	2:25-2:45	95°C.	11:40-2:00 PM & 2:45-8:00 PM	40° 95°	8:00-9:00	—	965 gm.	852 gm.	56.5	59.60	64.6
8	—	3:20-3:40	91°C.	12:30-3:20 P.M.	67°	4:20-4:40	1.75# 27 % HCl	835 gm	Decomposition	?	?	?
9	5 lb. 8 oz.	11:55-12:20	93°C.	11:35-11:55 AM & 12:20-1:20 PM	70-74° 99°	1:20-2:45	"	983 gm.	"	?	?	?
10	5 lb.	10:50-11:10	90°C.	11:15-10:50 & 11:10-3:50	94°	—	—	953 gm.	873 gm.	58.0	61.2	66.4
11	—	11:20	74°C.	11:45-1:15	95° 97°	Steam distilled &		—	713 gm.	47.4	50.0	54.2
13	6 lb. 10 oz.	11:25 10:10	58° 86°	12:10 3:00 PM	91° 95°	3:00-4:30		—	713 gm.	47.4	46.8	54.2
14	7 lb. 6 oz.	11:25 11:55	62° 91°	11:55 3:00	91° 97°	— —	— —	— —	750 gm.	49.8	49.2	57.0

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Run 15—Using 7.5 lbs. $PbCl_2$ instead of 5 lbs. gave 925 gms. of distilled lead tetraethyl, giving thus a yield of 65 per cent on ethyl bromide.

From a resume' of these experiments it can be readily seen that ethyl bromide works better than ethyl chloride, but the latter substance certainly contains some impurities detrimental to a Grignard reaction or it would start better. The time intervening between the time the initial charge is placed and the mixture started indicates this quite clearly.

It apparently makes little difference whether the lead chloride is added before the addition of the toluene or after, but it is paramount to keep the temperature down when adding the lead chloride, and later raising the temperature by distilling off ether and adding toluene.

In some of the reactions, the reaction mixture after refluxing for a long time was a spongy mass.

The course of this reaction is similar to every other Grignard reaction. First, the ethyl halide forms the ethyl magnesium halide in solution in ether, and lead chloride adds molecularly to this, and on heating lead tetraethyl is formed.

X.

The cost of lead tetraethyl is rather difficult to estimate owing to the lack of data on cost of lead chloride and ether.

Figuring, however, on ether at thirteen cents per pound and lead chloride at nine cents, we have the following chem-

ical cost; loss of ether being figured as one-fourth pound per pound of lead tetraethyl and toluene the same.

1	1	pound of Magnesium at .65	= $ 0.65
	½	pound of Ether at .13	= 0.065
	4–¼	pounds of EtBr at .30	= 1.275
	½	pound of toluene at .04	= .020
	5	pounds of lead chloride at .09	= .45
	2	pounds lead tetraethyl	= 2.460
	Credit for Bromine at .22— 90 % recovery		= .61
	2	pounds lead tetraethyl	= $1.85
	1	" " "	= .925

On basis of ethyl chloride:—

	1	pound of magnesium at .65	= 0.65
	½	pound of ether	= .065
	2.68	pounds ethyl chloride at .18	= .48
	½	pound toluene at .04	= .02
	5	pounds lead chloride at .09	= .45
	1.75	pounds lead tetraethyl	= 1.665
	1	" " "	= .945

These figures do not include the saving by recovering the lead not going to lead tetraethyl, which in each case would substract nine cents per pound from this price as listed.

I feel, however, that these costs can be improved upon. The loss of ether is based on phenyl ethyl alcohol figures as well as the toluene loss, but both are high, since the reaction can be run in a closed system except for one breather opening at the end of the condenser. Likewise the lead chloride is a factor, since it must react by surface contact; the more finely divided the lead chloride, the more surface is exposed to reaction.

The capacity of the plant naturally determines the labor cost to add to the chemical cost.

The process as outlined here is patentable from several standpoints.

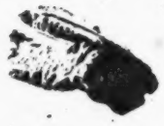
1. The use of ethyl chloride to form the Grignard reagent is not mentioned for lead tetraethyl in literature.

2. The use of toluene or other solvents to raise the temperature at the end of reaction is of course the real point of the process.

In conversation with two chemists at Cleveland, November 6, 1924, both stated that the Grignard reaction gave very poor yields of lead tetraethyl, which shows at once that the trick of the thing is not known.

Respectfully submitted,

ECB:E
11-17-24



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7455

THE DOW CHEMICAL COMPANY
RESEARCH REPORT

TENTATIVE PROCESS FOR TETRA ETHYL LEAD

By

E.C. Britton

UNLESS SPECIAL PERMISSION IS OBTAINED, THIS REPORT MAY NOT BE REMOVED FROM THE ORGANIC LABORATORY OFFICE AT ANY TIME

ORGANIC RESEARCH LABORATORY

7456

Issued to E. C. Britton

THE DOW CHEMICAL COMPANY

RESEARCH REPORT

No. 406 June 22, 1926

Tentative Process for Tetra Ethyl Lead

by

Edgar C. Britton

Copies issued to

File A.
E. C. Britton
I. F. Harlow

Tentative Process for Tetra Ethyl Lead

The tetra ethyl lead report, No. 316, gives experimental details for the process which have since been changed to include several new features. We are considering the production of leadtetraethyl and, in going over the details of plant construction, it would seem advisable to use the following procedure.

The Grignard reaction between magnesium, ether, and ethyl chloride should be carried out in a reactor separate from the subsequent reaction with lead chloride. The ether solution of ethyl magnesium chloride would then be run into lead chloride mixed with toluene, stirring all the while. The reaction mixture would then be distilled, the ether coming off first—refluxing then at a higher temperature as indicated in the former report. After this refluxing as much toluene should be distilled off as is possible before adding water to the reaction mixture. This procedure will give a maximum of dry solvent to use over again in the process. After treatment with water, the still contents are steamed to remove the lead tetra ethyl and after it is all removed the residue in the still is filtered. The filter cake would have in it unchanged lead chloride and metallic lead finely divided. This cake would be used for the lead recovery. The solution from the lead would contain the magnesium chloride. This solution might be evaporated down and used over again to make metallic magnesium or could be thrown away as desired.

—2—

As indicated, this process is extremely simple and easy of operation. The main difficulties of the reaction are involved in the preparation of the ethyl magnesium chloride

because all the materials going into this must be very pure or else the yield of ethyl magnesium chloride is low, but, by running the process in a still separate from the reaction with lead chloride, it can be controlled very well.

Figuring on the basis of the laboratory process, and it must be remembered that these figures can only be interpreted on that basis, we have for the production of 200 gallons of lead tetra ethyl per day the following figures.

Table I

1,316	lbs.	Magnesium	at 65	cents	= $	855.40
3,500	"	Ethyl Chloride	" 12	"	=	420.00
675	"	Ether	" 13	"	=	87.50
540	"	Toluene	" 4	"	=	21.60
2,000	"	Lead Oxide	" 11.15	"	=	233.00
1,300	"	Hydrochloric acid ..	" 1.25	"	=	16.35
						$1,623.85

Yield of 2.03 lbs. of lead tetraethyl per pound of magnesium.
2,700 lbs. of lead tetraethyl or 61.8 %.

Chemicals,	= $\frac{1623.85}{2700}$	= 60.2	cents per lb.
Labor	=	3.0	" " "
Factory Expense	=	2.2	" " "
Deprec. 100% per yr. of 50,000 or 90,000 per year	=	6.18	" " "
Maintenance		1.00	" " "
Est. cost per pound.....	=	72.58	" " "

—3—

There are several changes which may be made in the process, tending toward simplifying and cheapening the

4

process. The cost of the ether as listed above is occasioned because of its volatility and the fact that we are using in the process something like 9,000 pounds. This amount of ether is not necessary to use and may be replaced by toluene to some extent which will naturally cut down that loss. The amount of lead listed above is only that amount required for the lead tetra ethyl and loss in aqueous solution. The actual amount of lead chloride initially used is much greater. The amount of toluene listed in the above is the estimated loss occasioned by handling and distilling. The initial amount used is much greater. The following figures give the amount of materials which enter into the process.

Table II

1,316	lbs.	of metallic magnesium .. =	95	gallons
3,500	"	" ethyl chloride	475	"
9,320	"	" ether	1,550	"
13,330	"	" toluene	1,772	"
10,000	"	" lead chloride	300	"
			4,192	"

Amounts necessary to recovery:

1,750	lbs.	of metallic lead		
6,300	"	" lead chloride		
9,320	"	" ether	1,550	gallons
13,330	"	" toluene	1,772	"
1,316	"	" metallic magnesium as $MgCl_2$		

Table II gives the materials which must be recovered. The total volume of materials at any time which will enter into the reaction is 4,192 gallons or 560 cubic feet. If we

ran the plant 24 hours a day, it is presumed that we should run six batches, using three reactors, two batches per day in each. This is the maximum figure. In this way we would have to have 94 cubic feet capacity per batch. A reactor 6 ft. diameter and 6 ft. high, 170 cu. ft. capacity, certainly would be ample for all needs. These reactors would be used for the action of the Grignard solution and the lead chloride. A single reactor or possibly one for each of the 6 ft. by 6 ft. reactors would be used for making the Grignard solution and a 40 cu. ft. still would be all that is necessary. Owing to the corrosive action of the lead chloride which would be in solution after treatment of the reaction mass with water, it would be necessary to use lead reactors for the steaming out of the lead tetra ethyl. The Grignard reactor could be made of iron. Indeed, that would be very much preferable. We have no data as yet on the recovery of the lead, although it appears that treatment of the press cake with hydrochloric acid will form lead chloride of the finely divided metallic lead, especially if the solution is hot. The lead chloride initially required would be made from lead oxide and hydrochloric acid. All materials entering into the Grignard reaction must be perfectly dry and the lead chloride must be perfectly dry. Consequently, all lead chloride used and recovered lead chloride would have to be

dryed before entering into the process. The ether which is recovered, except that which might come from the steam distillation can be used directly into the process, but any ether or toluene obtained from the steaming out would have to be dry before it could be used. The lead tetra ethyl

obtained in the steaming out of the reaction mass would have to be purified by distillation under vacuum. The lead tetra ethyl distills under vacuum at about 100° C. and a vacuum still of almost any design would be all that is necessary.

There are several lines of research which would be necessary to prove out this process completely. In the first place, our laboratory results were practically all run with ethyl bromide, but the cost of this is too high if lead tetra ethyl must be sold at around a dollar a pound. Consequently, more experiments must be carried out, using ethyl chloride. Furthermore, experiments should be conducted tending to minimize the amount of ether used in the process. It may be possible to cut down the amount of ether to the theoretical quantity to form the Grignard complex.

$$C_2H_5MgBr \qquad (C_2H_5)_2O$$

This amount of ether would be about one-eighth of that which we have indicated as used in the process. This would mean quite a saving because the loss of ether, then, would not be in proportion to what we have listed.

In any event, our experiments should be repeated on a large enough scale to enable us to translate all data to large scale production, and I deem it advisable to run

such a plant for one or two months before a larger plant is built. The Grignard process is an entirely new commercial process and its possibilities of trouble are great. Consequently, we should exercise great caution in going into the commercial use of this reaction. Furthermore, lead tetra

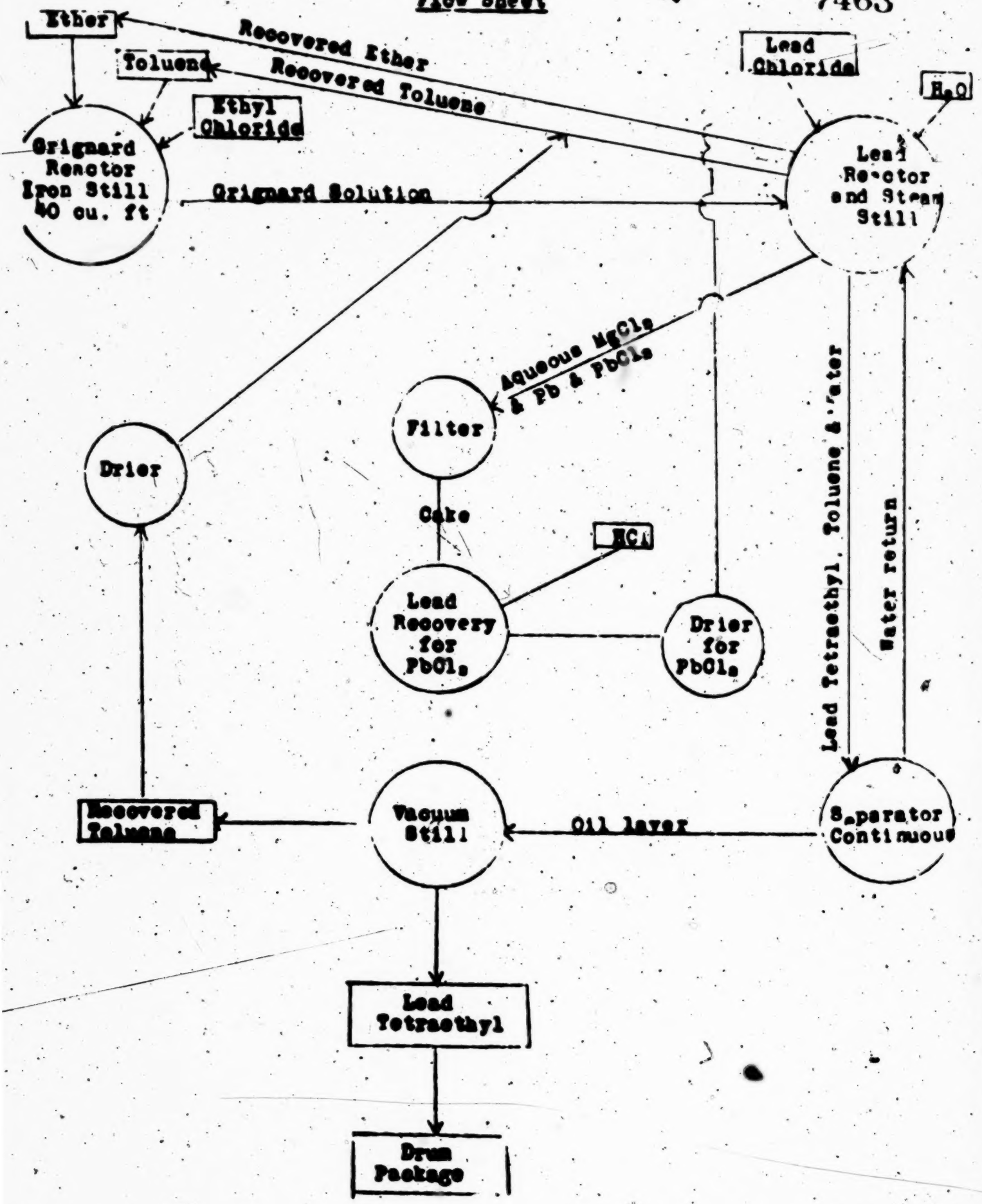
ethyl is poisonous and all data on handling and processing should be carefully studied.

Respectfully submitted,

ECB:E
6-21-26

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Flow Sheet


Ether
Recovered Ether
Toluene
Recovered Toluene
Ethyl Chloride
Lead Chloride
H_2O
Grignard Reactor Iron Still 40 cu. ft
Grignard Solution
Lead Reactor and Steam Still
Aqueous MgCl2 & Pb & PbCl2
Filter
Drier
Coke
HCl
Lead Recovery for PbCl2
Drier for PbCl2
Lead Tetraethyl, Toluene & Water
Water return
Recovered Toluene
Vacuum Still
Oil layer
Separator Continuous
Lead Tetraethyl
Drum Package



Defendant's Exhibit (GM) No. 281

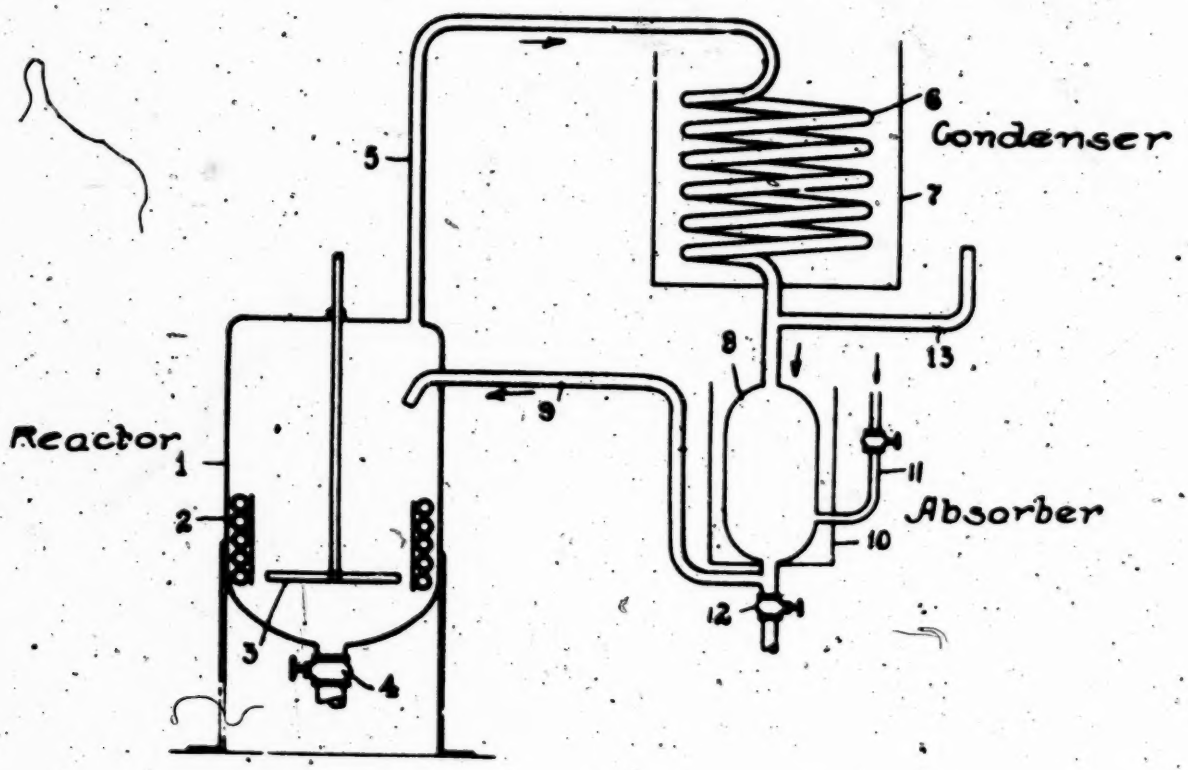
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May 19, 1931. E. C. BRITTON 1,805,756

METHOD OF MAKING METAL ALKYL COMPOUNDS

Filed Nov. 16, 1926 2 Sheets-Sheet 1

Fig. 1.



[5405]

INVENTOR
Edgar C Britton
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May 19, 1931. E. C. BRITTON 1,805,756

METHOD OF MAKING METAL ALKYL COMPOUNDS

Filed Nov. 16, 1926 2 Sheets-Sheet 2

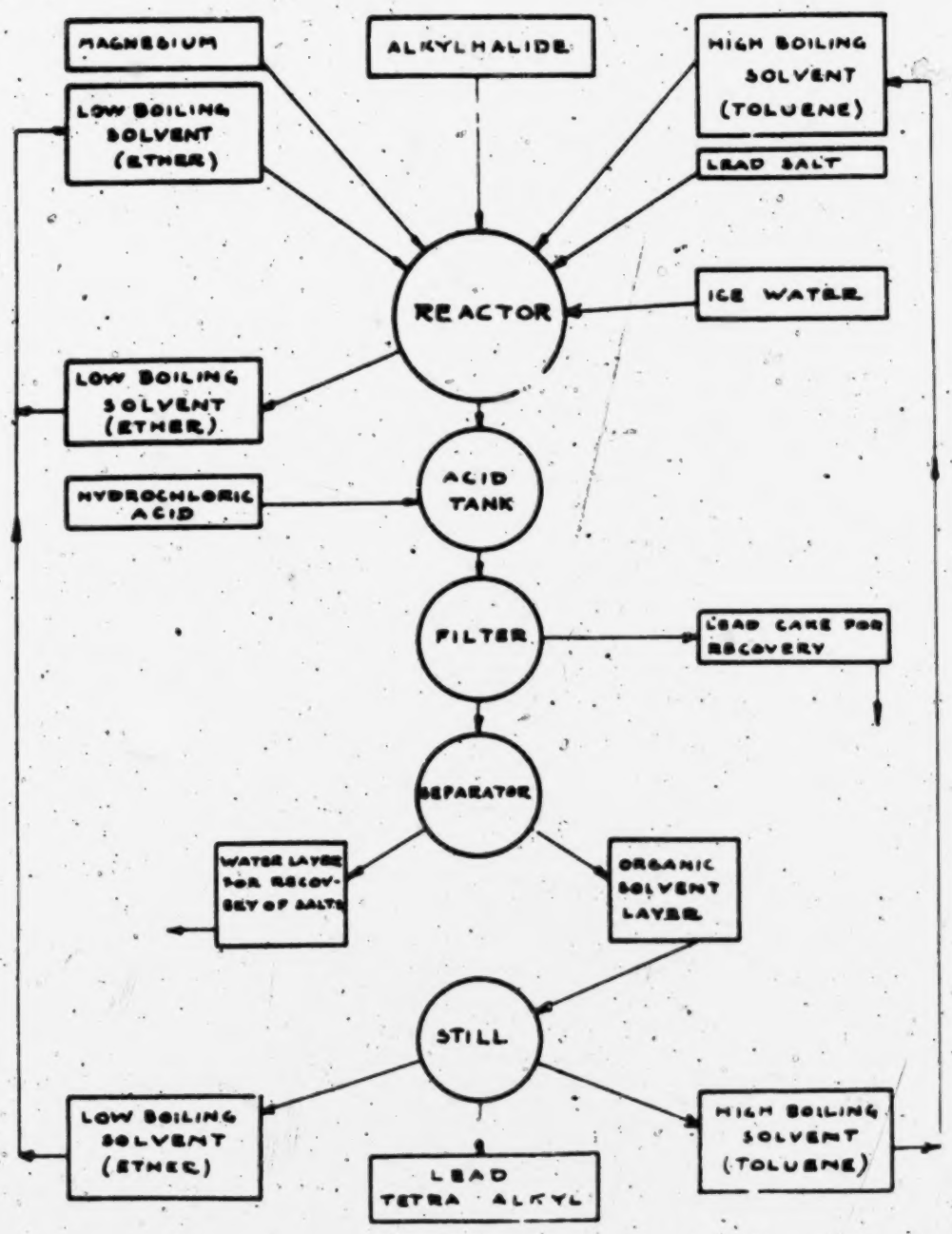


Fig. 2

INVENTOR.
Edgar C. Britton
BY
Day, Oberlin & Day
ATTORNEYS.

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Patented May 19, 1931 1,805,756

UNITED STATES PATENT OFFICE

EDGAR C. BRITTON, OF MIDLAND, MICHIGAN, ASSIGNOR TO THE DOW CHEMICAL COMPANY, OF MIDLAND, MICHIGAN, A CORPORATION OF MICHIGAN

METHOD OF MAKING METAL ALKYL COMPOUNDS

Application filed November 14, 1928. Serial No. 148,714.

The present invention relates to methods for preparing metal alkyl compounds, more especially lead alkyl compounds, e. g. tetraethyl lead.

There are three reported methods for the preparation of tetraethyl lead, $Pb(C_2H_5)_4$, viz., (1) by the action of an ethyl halide and sodium lead alloy, (2) by the action of zinc ethyl and lead chloride, and (3) by the action of ethyl magnesium bromide or iodide on lead chloride. The first to attempt use of this last mentioned method involving the use of organic magnesium compounds, RMgX, or of the so-called Grignard reagents, were, so far as I am aware, Pfeiffer & Truskier, Ber. 37, 1127 (1904) who reacted magnesium, ethyl iodide and lead chloride in ether solution to form lead tetraethyl. The latter, however, decomposed on distillation producing metallic lead, and in order to prevent such decomposition, the tri-ethyl lead chloride was prepared. Gruttner & Krause, Ber. 49, 1415 (1916), subsequently reported the preparation of lead tetraethyl as a distilled product by this reaction, but they were able to obtain only 85 grams of pure lead tetraethyl from 300 grams of ethyl magnesium bromide and 300 grams of lead chloride; a yield of only 38 per cent. on the lead chloride used.

I have discovered that, in any method for making organic compounds by the Grignard reaction, the action of heat on the addition product of any compound which adds to the organo-magnesium haloid complex increases the yield of the desired end product. That is, while the first stage of reaction can be conducted at lower temperatures, the temperature should be higher for the last stage. Where a low-boiling solvent, such for instance as ether, is used initially, this action of heat is best accomplished by adding a higher-boiling solvent as for example toluene, xylene, etc., to the reaction mixture and then distilling off the ether or low-boiling solvent, whereby the temperature may be elevated to any point determined as the best for the reaction in hand. The foregoing discovery is of applicability not merely to the making of lead tetraethyl but other like organic compounds by the Grignard reaction.

This application is a continuation in part of my application Serial No. 389 filed January 3, 1924.

To the accomplishment of the foregoing and related ends, the invention, then, consists of the steps hereinafter fully described and particularly pointed out in the claims, the annexed drawings and the following description setting forth in detail one approved method of carrying out the invention, such disclosed mode, however, constituting but one of the various ways in which the principle of the invention may be used.

In said annexed drawings:—

Figure 1 is a diagrammatic representation of a special apparatus for carrying out such improved method or process. Fig. 2 is a flow sheet illustrating the sequence of steps and movement of materials in the process as applied to the manufacture of a tetra-alkyl lead compound.

The apparatus thus shown may for convenience be first described. Such apparatus will be seen to consist of a reactor 1 on the order of a still that is provided with a steam coil 2 and a suitable externally driven stirrer 3. An opening (not shown) which may be properly sealed will also be provided for the convenient introduction of certain of the ingredients, as well as a valve controlled outlet opening 4 at the bottom of the reactor. Connected with the latter by means of a duct 5 is a condenser coil 6 located in a cooling chamber 7, the lower end of such coil being connected with an absorber 8 from which a duct 9 leads back to the reactor. Said absorber, like the condenser, is located in a cooling chamber whereby the temperature of the returning condensate may be controlled, and connected with said absorber, preferably near its lower end, is a valve controlled duct 11 through which additional ingredients may be supplied to the condensate at this stage. For the purpose of withdrawing the condensate from the system, instead of returning the same through duct 9 to reactor 1, a valve controlled outlet 12 is provided at the lower end of the absorber. A vent 13 is also shown as leading from the extension of the

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condenser coil 6 which connects the latter with the absorber.

The procedure as applied for instance for preparing lead tetraethyl by the present improved method and using the apparatus just described may be illustrated by the following example:—1 pound of magnesium shavings is placed in the still or reactor 1 along with any usual or preferred solvent, as for example 5 pounds of ether, and a crystal of iodine. To this, cooled and stirred as much as possible, is then added an ethyl halide, as for instance ½ pound of ethyl bromide. The reaction of the latter and magnesium will proceed at once and generally cause the ether to boil. After this initial reaction is over, a mixture of ethyl halide and solvent, e. g. 3¾ pounds of ethyl bromide and 4 pounds of ether is added gradually over a period of from 20 to 30 minutes, such additional amount f ethyl bromide completing the formation of the theoretical amount of ethyl magnesium bromide which constitutes the specific organo-magnesium haloid complex involved. The temperature during this stage should be approximately 40 degrees C. or in any case below 50 degrees C. An organic solvent capable of providing a higher temperature, for instance 10 pounds of toluene, is added to the reaction mixture and then a salt of lead, e. g. 5 pounds of dry, powdered, technical chloride, the addition of the latter being spread over approximately 15 minutes and the temperature remaining at that last given. Next, the reaction mixture is refluxed at a temperature of from 67 to 70 degrees C. for 20 minutes, following which the ether, if such be used, is distilled off by raising the temperature in the reactor 1 to from 90 to 95 degrees C. and the mass refluxed at this temperature for approximately three hours.

The reactions occurring during the procedure just described may be represented by the following equations:—

(1) $C_2H_5Br + Mg = C_2H_5MgBr$

(2) $2C_2H_5MgBr + PbCl_2 = Pb(C_2H_5)_2 + MgCl_2 + MgBr_2$

(3) $2(C_2H_5)_2Pb = Pb(C_2H_5)_4 + Pb$.

The reaction product resulting from the foregoing steps consists of a grayish black spongy mass which after cooling to 50 degrees C. is treated with ice and stirred, whereupon the whole becomes liquid and is drawn off into a suitable container. After acidifying to Congo red reaction, approximately 1½ pounds of 30 per cent. hydrochloric acid, HCl, being required, the mass is filtered and the filtrate put in a separator and allowed to settle thoroughly. After complete separation the upper toluene layer is removed and subjected to fractional distillation under vacuum. The remaining ether passes over first at low temperature, the toluene at 40 degrees C. and the lead tetraethyl at approximately 100 degrees C., under a 28¼ inch vacuum.

As indicated, regardless of any solvents and whether or not pressure be used, the matter of especial advantage which I wish to make clear is the desirability of the application of considerable heat to the magnesium haloid addition complex reaction product of the desired metal, as it is thereby that the yield-increase of the desired end product is obtained.

As a general rule, the shorter the time of forming the magnesium compounds, the better yield one can obtain. While as at present advised ethyl bromide works better than ethyl chloride in the formation of the organo-magnesium complex, this may be due to the presence of some impurity in such chloride which is detrimental to a Grignard reaction.

In using ethyl chloride as the organ halide, such chloride may be added as a liquid in solution with ether, or since it has a boiling point of 13 degrees C., it may be introduced as a gas through pipe 11 into the return condensate, or pressure can be used with either halide if preferred.

By initiating the Grignard reaction with ethyl bromide as the organic halide and then finishing with ethyl chloride, a much more rapid formation of Grignard compound can be realized than by using ethyl chloride alone. If ethyl bromide is used instead of ethyl chloride, it may be entered into the reaction by being introduced into the returning distillate, or since it is a liquid at normal temperatures, it may be introduced directly into the reaction chamber.

Other modes of apr'ying the principle of my invention may be employed instead of the one explained, change being made as regards the method herein disclosed, provided the step or steps stated by any of the following claims or the equivalent of such stated step or steps be employed.

I therefore particularly point out and distinctly claim as my invention:—

1. In a method of making a metal alkyl compound, the step which consists in heating the initial reaction product of an alkyl magnesium halide and a halide of the metal at a temperature above 50° C.

2. In a method of making a metal alkyl compound, the steps which consist in reacting between an alkyl-magnesium halide and a halide of the metal at a temperature not much exceeding room temperature and subjecting the product so formed to a materially higher temperature.

3. In a method of making a metal alkyl compound, the steps which consist in reacting between an alkyl-magnesium halide and a halide of the metal at a temperature below 50° C., and heating the product so formed to a temperature materially above 50° C.

4. In a method of making a metal alkyl

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compound, the step which consists in reacting between an alkyl-magnesium halide and a halide of the metal in the presence of a non-reactive carrier liquid at a temperature below 50° C., and finishing the reaction at a higher temperature.

5. In a method of making a metal alkyl compound, the steps which consist in reacting between an alkyl-magnesium-halide and a halide of the metal in the presence of a non-reactive carrier liquid, at a temperature below 50° C., and finishing the reaction at a higher temperature, under pressure.

6. In a method of making a metal alkyl compound, the steps which consist in treating magnesium with an alkyl halide in a non-reactive solvent medium, adding to the resulting product a halide of the metal at a temperature below 50° C., and finishing the reaction by heating at a temperature materially above 50° C.

7. In a method of making a metal alkyl compound, the steps which consist in treating magnesium with an alkyl halide in a non-reactive solvent medium, adding to the resulting product a halide of the metal at a temperature below 50° C., and finishing the reaction by heating at a temperature materially above 50° C., under pressure.

8. In a method of making a metal alkyl compound, the steps which consist in treating magnesium with an ethyl halide in a non-reactive solvent medium, adding to the resulting product a halide of the metal at a temperature below 50° C., and finishing the reaction by heating at a temperature materially above 50° C.

9. In a method of making a metal alkyl compound, the steps which consist in reacting between an alkyl-magnesium halide and a halide of the metal at a temperature below 50° C. in the presence of ether and an organic solvent having a higher boiling point than the ether, removing the ether, and then heating at a temperature materially higher than that of the initial reaction.

10. In a method of making a metal alkyl compound, the steps which consist in reacting between an alkyl-magnesium halide and a halide of the metal at a temperature below 50° C. in the presence of ether and a solvent of higher boiling point than the ether, distilling off the ether, and heating the initial product at a temperature materially above 50° C.

11. In a method of making a metal alkyl compound, the steps which consist in reacting between an alkyl-magnesium halide and a halide of the metal at a temperature below 50° C. in the presence of ether and an aromatic hydrocarbon solvent, distilling off the ether, and then heating the initial reaction product temperature materially above 50° C.

12. In a method of making a metal alkyl compound, the steps which consist in adding to an ethereal solution of an alkyl-magnesium halide an aromatic hydrocarbon solvent and a halide of the metal, heating the initial reaction product to distill off the ether, and then refluxing such product at a temperature materially above 50° C.

13. In a method of making a lead alkyl compound, the step which consists in heating the initial reaction product of an alkyl magnesium halide and a lead halide at a temperature above 50° C.

14. In a method of making a lead alkyl compound, the steps which consist in reacting between an alkyl-magnesium halide and a halide of lead at a temperature not much exceeding room temperature, and heating the product so formed to a materially higher temperature.

15. In a method of making lead tetraethyl, the steps which consist in reacting between an ethyl-magnesium halide and a halide of lead at a temperature not much exceeding room temperature, and heating the product so formed to a temperature above 50° C.

16. In a method of making lead tetraethyl, the steps which consist in reacting between an ethyl-magnesium halide and lead chloride at a temperature below 50° C., and heating the product so formed to a temperature materially above 50° C.

17. In a method of making lead tetraethyl, the steps which consist in reacting between an ethyl-magnesium-halide and a lead halide in the presence of a non-reactive carrier liquid, at a temperature not much in excess of room temperature, and finishing the reaction at a temperature materially higher.

18. In a method of making lead tetraethyl, the steps which consist in reacting between an ethyl-magnesium-halide and a lead halide in the presence of a non-reactive carrier liquid, at a temperature below 50° C., and finishing the reaction at a higher temperature.

19. In a method of making a lead alkyl compound, the steps which consist in treating magnesium with an alkyl halide in a non-reactive solvent medium, adding to the resulting product a lead halide at a temperature below 50° C., and finishing the reaction by heating at a temperature materially above 50° C.

20. In a method of making a lead alkyl compound, the steps which consist in treating magnesium with an ethyl halide in a non-reactive solvent medium, adding to the resulting product a lead halide at a temperature below 50° C., and finishing the reaction by heating at a temperature materially above 50° C.

21. In a method of making lead tetraethyl, the steps which consist in reacting between an ethyl-magnesium halide and a lead halide at a temperature below 50° C. in the presence

of ether and a solvent having a higher boiling point than ether, distilling off the ether, and then heating the initial reaction product at a temperature materially above 50° C.

22. In a method of making lead tetraethyl, the steps which consist in reacting between an ethyl-magnesium halide and a lead halide at a temperature below 50° C. in the presence of ether and an aromatic hydrocarbon solvent, distilling off the ether, and then heating the initial reaction product at a temperature materially above 50° C.

23. In a method of making lead tetraethyl, the steps which consist in reacting between an ethyl-magnesium halide and a lead halide in the presence of ether and toluene, distilling off the ether, and then heating the initial reaction product at a temperature materially above 50° C.

24. In a method of making lead tetraethyl, the steps which consist in adding an aromatic hydrocarbon solvent and lead chloride to an ethereal solution of an ethyl-magnesium halide, distilling off the ether, and then heating the initial reaction product at a temperature materially above 50° C.

25. In a method of making lead tetraethyl, the steps which consist in reacting between an ethyl-magnesium halide and lead chloride in the presence of ether and toluene at a temperature below 50° C., heating the initial product up to a temperature of approximately 90° to 95° C., and refluxing the same at the latter temperature.

26. In a method of making a metal alkyl compound, the steps which consist in treating magnesium with an alkyl bromide, then with an alkyl chloride in a non-reactive carrier liquid, treating the resulting compound with a halide of the metal at a temperature not much in excess of room temperature, and finishing the reaction at a materially higher temperature.

27. In a method of making a metal alkyl compound, the steps which consist in treating magnesium with an alkyl bromide, then with an alkyl chloride in a non-reactive carrier liquid, treating the resulting compound with a halide of the metal at a temperature below 50° C., and finishing the reaction at a higher temperature.

28. In a method of making a metal alkyl compound, the steps which consist in treating magnesium with an alkyl bromide, then with an alkyl chloride in a non-reactive carrier liquid, treating the resulting compound with a halide of the metal at a temperature below 50° C., and finishing the reaction at a higher temperature, under pressure.

29. In a method of making lead tetraethyl, the steps which consist in treating magnesium with ethyl bromide, then with ethyl chloride, in a non-reactive carrier liquid, treating the resulting compound with a lead halide at a temperature not much in excess of room temperature, and finishing the reaction at a temperature materially higher.

30. In a method of making lead tetraethyl, the steps which consist in treating magnesium with ethyl bromide, then with ethyl chloride in a non-reactive carrier liquid, treating the resulting compound with a lead halide at a temperature below 50° C., and finishing the reaction at a higher temperature.

Signed by me this 3d day of November, 1926.

EDGAR C. BRITTON.

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Cost of $Pb(Et)_4$

Raw materials.

THIS REPORT IS THE PROPERTY OF THE DOW CHEMICAL COMPANY

97.2#	of Mag at 30¢ =	29.16
268 #	of Ethyl Chloride at 10¢ =	26.80
278x2 #	of Ethyl Chloride at 6¢ =	3336
100 #	of ether at 9¢ =	9.00
Total raw material	=	98.27
Recovered lead = 210# at 5¢	=	10.50
		87.77

242# of $Pb(Et)_4$ a yield of 74 % = 36.3¢ per #

4/18/31

COPY from files of Dr. H. H. Dow

Memorandum

Mr. Webb, president of the Ethyl Gasoline Corporation, was here Friday, June 25, 1926. Mr. Webb stated that the sales of ethylized gas were progressing as well or better than anticipated. The Standard Oil Company of Indiana have been selling 15% of their gas in the form of ethyl gas wherevet they have put it on sale. Mr. Webb stated that they feel confident of being able to boost their sales to 30%.

Mr. Webb states that he is confident that the ethyl chloride will be withdrawn at a rate fully up to the estimate they gave us. We are shipping this month to the Ethyl Gasoline Corporation 105,000 pounds of ethylene dibromide, which is their contract requirements beginning June 1.

Mr. Webb felt sure that on their second contract they would want deliveries to begin on August 1 and quite likely at the full rate of 100,000 pounds per month.

Mr. Webb brought with him two gentlemen, a Mr. Proffitt from Denver and a Mr. Huff from Sioux City, Iowa. Mr. Proffitt conducts a consulting laboratory in Denver; he is an organic chemist and formerly manufactured dye intermediates. Mr. Huff is not a chemist but is engaged in manufacturing a serum for hog cholera and apparently is very successful. Mr. Proffitt has a process for the manufacture of lead tetra ethyl, Mr. Huff apparently being his backer. They have manufactured and sold small quantities.

The Ethyl Gasoline Corporation has tentatively entered into a contract with them for the manufacture of lead tetra ethyl. However, on account of their being located so far from the present market for ethyl gas and due to the fact that the Ethyl Gas people wish to have all manufacture of lead tetra ethyl conducted under the supervision of their experienced physician in order to prevent any further casualties which might give them a "black eye," they are desirous of having the Dow Company manufacture the lead tetra ethyl either under our process or the Denver process. Mr. Webb stated very positively that he felt that we are the logical people to undertake its manufacture as he could not afford to depend on one source of supply and, if manufactured at Midland, it could be blended right here with the ethylene di bromide thus saving freight on both commodities; furthermore, Midland being in the territory of the Standard Oil Company of Indiana, who are their largest customer for ethyl gas, would be another added advantage. Our process for the manufacture of lead tetra ethyl uses as principal raw materials, outside of lead, magnesium metal and ethyl chloride.

The matter is being held in abeyance until we can fully demonstrate the advantages and safety of our process or determine from our further experimental work that it would be unwise to enter into its manufacture. If we enter into its manufacture, it will probably call for a capital investment of $100,000. The material would be needed at about the rate of 1,000,000 pounds for the first year starting a year from now.

COPY from files of Dr. Herbert H. Dow

Midland, Michigan.
June 28, 1926.

Reasons why we should not manufacture Lead Tetra Ethyl.

1st— Uncertainty of the business.

2nd— Hazard of the business undoubtedly great.

3rd— Interference with other lines.

4th— Shortage of power.

5th— Lack of capital.

6th— Any casualties would to some extent injure our good name.

Reasons why we should manufacture Lead Tetra Ethyl.

1st— If we will make a reasonable price the Ethyl Gas will not insist on our gambling on the outcome but will guarantee amortization of the plant "B". Comparatively speaking the sales expense would be negligible.

2nd— Ethyl Gas people state that their Doctor Kehoe has worked out the necessary precautions to take and will personally see that the manufacture will be safeguarded to such an extent that risks are reduced to normal.

3rd— All growth interfered with normal operation, but in the end has paid.

4th— The price proposed for Magnesia Metal would permit us to purchase power and still make a satisfactory profit on the metal, our own investment in power delayed to such time as a fully established demand warrants.

5th— (a) By purchasing power until the business was well established capital would be greatly conserved.

(b) Investment in Magnesia Metal cells to increase capacity is already contemplated, and if not used for Lead Tetra Ethyl would undoubtedly be used for the increasing demand for Magnesium Metal.

(c) Increased production of metal would cheapen cost of present production.

(d) The Nail process for the manufacture of Calcium and Magnesium will produce more Magnesium than we can market. Therefore, all the Magnesium Chloride used for Lead Tetra Ethyl would give additional profit to the nail process of not less than ten dollars per ton of Magnesium Chloride so used equivalent to about six cents on the metal or three cents on the Lead Tetra Ethyl.

(e) Any help given the Ethyl Gas Corp. should react to give a better market for Ethylene di bromide.

—2—

(f) We already are manufacturers of another raw material, namely Ethyl Chloride.

(g) The production of Lead Tetra Ethyl at the point where Ethylene di bromide is made is to be greatly desired, and Midland is situated in the territory of the Standard Oil of Indiana, Ethyl Gas Co.'s largest customer. All blending for this territory would be done here.

(h) This line of manufacture not being so competitive as most lines should permit of the restoration of capital at an earlier date than we could normally expect.

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6th— A sinking fund should be provided and nothing left undone to prevent accidents, and with our experience we are in a better position than inexperienced concerns. This would justify our entering the field as we have a sincere belief that we could prevent any serious accident where others might possibly have serious trouble.

Defendant's Exhibit (GM) No. 285

C. E. WILSON EMPLOYMENT HISTORY WITH GENERAL MOTORS CORPORATION

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Date	Position
4-20-1919	Chief Engineer, Remy Electric Division
12-1-1921	Factory Manager, Remy Electric Division
12-1-1924	Assistant General Manager, Remy Electric Division
2-1-1925	General Manager, Remy Electric Division
1-1-1928	General Manager, Delco-Remy Division
1-1-1929	Assistant to President, General Motors Corporation, Central Office
6-1-1929	Vice President in Charge of Manufacturing Staff and Chairman Purchasing Committee, also Chairman Works Managers Committee, Assistant Group Executive in Charge of Household Appliance Group, Vice President in Charge of Aviation Group
1933	Vice President in Charge of Real Estate Operations
6-1930 to 9-1934	Vice President in Charge of Accessory Group (jointly with J. L. Pratt)
1-1-1934	Vice President in Charge of Accessory Operations
9-1-1934	Vice President and General Assistant to W. S. Knudsen to 5-1-1939
11-5-1934	Director to 1-26-1953
1-1-1935	Vice President and General Assistant to Executive Vice President - Car, Truck, Body, and Accessory Operations; Member Executive Committee from 8-5-1935 to 5-3-1937; Member of Administration Committee from 5-3-1937 to 5-1-1939; Member of Policy Committee from 5-3-1937 to 6-3-1946
5-1-1939	General Assistant to President; Executive Vice President 5-1-1939 to 6-18-1940; Vice Chairman of Administration Committee from 5-1-1939 to 6-18-1940

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Date	Position
6-18-1940	Acting President; Acting Chairman of Administration Committee 6-18-1940 to 1-6-1941
1-6-1941	President; Chairman of Administration Committee
6-3-1946	President; Chief Executive Officer; Chairman of Operations Policy Committee; Member of Financial Policy Committee; Chairman of Administration Committee
1-26-1953	Resigned

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Defendant's Exhibit (GM) No. 286

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EXCERPT FROM MINUTES OF

JOINT MEETING OF
OPERATIONS AND EXECUTIVE COMMITTEES
GENERAL MOTORS CORPORATION

July 17, 1930

Present: Mr. Alfred P. Sloan, Jr., Chairman
Mr. Albert Bradley
Mr. Donaldson Brown
Mr. Lammot duPont
Mr. Charles T. Fisher
Mr. Fred J. Fisher
Mr. Lawrence P. Fisher
Mr. R. H. Grant
Mr. O. E. Hunt
Mr. William S. Knudsen
Mr. J. D. Mooney
Mr. John L. Pratt
Mr. C. E. Wilson

Absent: Mr. John Thomas Smith

RAW MATERIALS - FUTURE COMMITMENTS

There was discussed the question of whether we would be justified in making forward purchases of certain basic raw materials in order to take advantage of what seem to be attractive prices existing at this time. The suggestion was made that we might purchase up to $20,000,000 worth of such materials in excess of what we would ordinarily purchase for our scheduled needs but not in excess of what we could use during the year 1931 on the basis of a conservative estimate of production.

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The Committee was in sympathy with the idea of making forward purchases of certain raw materials provided a satisfactory plan can be worked out for submission to the Finance Committee. Messrs. C. E. Wilson, John L. Pratt, Donaldson Brown and Wm. S. Knudsen were appointed a sub-committee to develop a plan for submission at the next meeting of this Committee for further consideration.

Defendant's Exhibit (GM) No. 287

GENERAL MOTORS CORPORATION

INTER-ORGANIZATION LETTERS ONLY

7480

TO Mr. J. L. Pratt, ADDRESS General Motors Corp., N. Y.

FROM Mr. C. E. Wilson, ADDRESS General Motors Corp., Detroit.

SUBJECT Purchase of Commodities.

August 25th, 1930.

On analysing the problem of purchasing commodities as we have discussed, I find the only feasible way in which we can reasonably make advance commitments is thru the concerns who fabricate material using the commodities.

While in some cases it would be possible to buy futures in the commodities themselves, I do not believe it would be good policy for us to do this as we would then be competing with the fabricators of the material who might be protecting themselves for their ordinary requirements which would include their estimate of what our requirements might be, in other words, we would be artificially reflecting the demand for the commodities. For example - if we attempted to buy rubber futures at the present time, we would be competing with the tire companies who in line with their policy, would be protecting themselves for their normal requirements, which would include a percentage of our business.

It seems to me that it is entirely feasible to work with our principal suppliers and obtain the price protection on the basic commodities discussed. The way I think the situation could be handled is as follows: using our Central Purchasing Committee as the vehicle for handling the work, we could estimate our requirements and work with the two or three Divisions who might be the principal users of the commodity involved. We could then handle the situation so that the basic commodity itself, with the commitment and the fabricating charge could be settled by the various Divisions.

For example - we could make copper commitments for certain tonnages with Anaconda, American Smelting and Kennecott as the Divisions desired, depending on the price at which we could purchase the material and the fabricating cost on the heavy items of consumption. In the case of copper to make sure we were not making any mistake or anticipating ourselves in any way in the future, we would go over the matter very carefully with the following Divisions -

Harrison Radiator,
Delco Remy,
Frigidaire,
Delco Products,
Guide Lamp,
Chevrolet.

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The situation would be handled so that it was sufficiently flexible so that any change in our specifications for the fabricating material would not interfere in any way with the liquidation of the commitment on the basic commodity.

In the case of lead, we would only have to deal with Delco Remy, Frigidaire and Harrison Radiator. In the case of zinc, we would deal with A. C. Terastedt, Guide Lamp, Harrison Radiator and Chevrolet.

I do not see any way of covering on rubber or cotton except thru the tire companies. On the basis of the decrease of price of cotton and rubber we should be able to purchase tires at the present time for from 20 to 30% less than at this time last year.

I believe, it would be worth while to set up the machinery for making such commitments within the next few weeks so that we will be in a position to take advantage of minimum prices.

Yours very truly,

C. E. Wilson.

CEW
MKY
CC- Mr. Donaldson Brown,
Mr. W. F. Knudsen.

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Defendant's Exhibit (GM) No. 288

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EXCERPT FROM MINUTES OF

FINANCE COMMITTEE
GENERAL MOTORS CORPORATION

September 8, 1930

Present: Messrs. Donaldson Brown
G. F. Baker, Jr.
W. S. Carpenter, Jr.
H. F. duPont
Irenee duPont
F. J. Fisher
J. S. Morgan, Jr.
C. S. Mott
Seward Prosser
J. J. Raskob
A. P. Sloan, Jr.
George Whitney

Absent: Messrs. Lammot duPont
P. S. duPont

Messrs. A. Bradley and J. L. Pratt were also present.

Mr. Donaldson Brown, Chairman of the Committee presided, and Mr. L. R. Beardslee, Secretary, recorded.

FORWARD COMMITMENTS FOR RAW MATERIALS

There was a general discussion regarding the desirability of making forward commitments for materials, in view of the apparently favorable prices prevailing at the present time.

It was the sentiment of this Committee that the operating executives should be permitted to contract for

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materials required in our business for a year in advance (based upon a conservative estimate of our requirements) in those cases where in their opinion such commitments are desirable purchases for the corporation.

Defendant's Exhibit (GM) No. 289

7184

EXCERPT FROM MINUTES OF

JOINT MEETING OF
OPERATIONS AND EXECUTIVE COMMITTEES
GENERAL MOTORS CORPORATION

March 12, 1931

Present: Messrs. A. P. Sloan, Jr.
A. Bradley
Lammot duPont
L. P. Fisher
R. H. Grant
W. S. Knudsen
J. D. Mooney
J. L. Pratt
C. E. Wilson
O. E. Hunt

Absent: Messrs. Donaldson Brown
C. T. Fisher
F. J. Fisher
J. T. Smith

The Chairman, Mr. A. P. Sloan, Jr., presided, and the Secretary, L. R. Beardslee, recorded.

PURCHASE OF COMMODITIES

Report was submitted by Vice-President Wilson dated March 11, 1931 (OC-916) showing purchases so far made of rubber, cotton, copper, zinc and lead, and upon motion, same was accepted and ordered filed.

Upon motion duly made, seconded and unanimously adopted, it was

RESOLVED, that it is the sense of this meeting that we should buy at this time our requirements of rubber, cotton, copper, zinc and lead to cover our estimated manufacturing schedules for the year 1931.

COMMODITY REPORT

3-11-31.

PURCHASES			REQUIREMENTS		
Date	Quantity	Average Price CWT	Date	Quantity	Monthly Average Price CWT
RUBBER					
Oct. 1 to Dec. 31	5500 ton	8.68	Dec. for January	1328	8.95
Jan 1. " Mar. 7	4175 "	7.82	Jan. " February	1097	8.94
			Feb. " March	1328	8.27
TOTAL	9675		Mar. " April	1433	
			TOTAL	5186	

The 4500 ton balance will provide for our June release of rubber to cover July Production.

COTTON					
Spot Futures	8470 bales	10.39	Dec. for Jan.	2136 Bales	10.94
May	1000 "	10.26	Jan. for Feb.	1800 "	10.15
July	1000 "	10.49	Feb. for March	2184 "	10.80
Oct.	1000 "	10.25	Mar. for April	2350 "	11.25
			TOTAL	8470	

The 7000 Bale Balance will provide for our June release of cotton to cover July production.

COPPER					
Oct. 31-30	25,000,000 lb.	9.50	Nov. for Jan.	92,000 lb.	10.25
Feb. 28-30	10,000,000 "	9.75	Dec. for Feb.	1,740,000 "	10.49
			Jan. for Mar.	3,728,000 "	9.90
TOTAL	35,000,000 "		Feb. for April	3,840,000 "	10.20
			TOTAL	9,400,000 "	

The 25,600,000 balance will provide for our September release for November Production. Copper releases from Divisions are on basis of 2/3 their requirements only.

ZINC (BRASS)					
Oct. 31-30	4,485,000 lbs.	4.40	Nov. for Jan.	40,000 lbs.	4.64
			Dec. for Feb.	240,000 "	4.44
			Jan. for March	600,000 "	4.38
			Feb. for April	590,000 "	4.37
			TOTAL	1,470,000	

The 3,015,000 lb. balance will provide for our July release for September production. Zinc(Brass) releases from Divisions are on basis of 2/3 their requirements only.

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PURCHASES			REQUIREMENTS		
Date	Quantity	Average Price CWT	Date	Quantity	Monthly Average Price CWT
		ZINC (99.99% Die Cast)			
Jan. 8	2700 ton	5.00	Feb. for March	82 ton	5.00
Jan. 15	500 "	5.10			
Feb. 19	500 "	4.95			
TOTAL	3700				

The 3618 ton balance will provide for our July release for August Production.

	LEAD (Desilverized)	
Mar. 2	1500 ton	4.545

This will provide for June release for July Production

C. E. Wilson.

CEW
MMJ

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Defendant's Exhibit (GM) No. 290

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EXCERPT FROM MINUTES OF

FINANCE COMMITTEE
GENERAL MOTORS CORPORATION

March 23, 1931

Present: Messrs. Donaldson Brown
W. S. Carpenter, Jr.
Irenee duPont
Lammot duPont
P. S. duPont
J. J. Raskob
Seward Prosser
A. P. Sloan, Jr.

Absent: Messrs. G. F. Baker, Jr.
H. F. duPont
F. J. Fisher
J. S. Morgan, Jr.
C. S. Mott
George Whitney

The Chairman, Mr. Donaldson Brown presided, and the Secretary, L. R. Beardslee, recorded.

FORWARD COMMITMENTS FOR RAW MATERIALS

Report of the Chairman dated March 23, 1931 (3121) showing forward purchases that have been made of rubber, cotton, copper, zinc and lead was read by the Secretary. It was explained to the Committee that because of the unusual conditions existing at the present time, and in harmony with the sentiment expressed by both the Finance and Operations Committees, we are purchasing our requirements of basic materials such as rubber, cotton, copper, zinc and lead to cover estimated production

5239

schedules for the calendar year 1931. Upon motion, this report was accepted and ordered filed, and the plan recommended of making purchases of basic materials up to the amount of our estimated requirements for the year 1931 approved.

Defendant's Exhibit (GM) No. 291

7490

EXCERPT FROM MINUTES OF

EXECUTIVE COMMITTEE
GENERAL MOTORS CORPORATION

April 9, 1931

PURCHASE OF BASIC MATERIALS

Report was presented to the Committee by Vice-President C. E. Wilson, dated April 9, 1931 (OC-939) regarding commodity purchases that have been made, which was ordered filed.

Upon motion, duly made, seconded and unanimously adopted, it was

RESOLVED, that previous action taken by this Committee on March 12, 1931

> "that it is the sense of this meeting that we should buy at this time our requirements of rubber, cotton, copper, zinc and lead to cover our estimated manufacturing schedules for the year 1931"

be rescinded, and be it further

RESOLVED, that Vice-President C. E. Wilson be authorized to use his judgment as to future purchases of important commodities, it being suggested that it might be well to contract

5291

for an additional month's requirements from time to time up to the total amount required for the year 1931 when and as in his judgment market conditions justify, rather than to at this time purchase all of the balance of our requirements for the year 1931.

To: OPERATIONS COMMITTEE

June 11, 1931.

From: C. E. WILSON.

Subject: COMMODITIES

CONSUMPTION

The following will be our consumption of the various commodities for 1931 projection on the basis of our first six month's requirements figuring the normal seasonal trend of business, also length of present inventory and commitment position.

	1931 Consumption		Position
Rubber	30,000,000 lbs.	13,400 long tons	May 1, 1932
Cotton.	11,250,000 lbs.	22,500 bales	Dec. 1, 1931
Copper	60,000,000 lbs.	20,000 tons	Feb. 1, 1932
Zinc	27,000,000 lbs.	13,500 tons	Nov. 1, 1931 Die Cast Feb. 1, 1932 Brass
Lead	31,000,000 lbs.	15,500 tons	July 1, 1931
Tin	3,000,000 lbs.	1,340 long tons	Jan. 1, 1932 Harrison Div.

INVENTORIES

Our investment in commodities as of June 1st were:

Rubber	22,464,120 lbs.	.07281 Avg. Price	1,635,686.65	
Cotton	3,500,000 lbs.	.01571 " "	55,000.00	(Margin Calls)
Copper	6,024,620 lbs.	.095 " "	572,338.96	
"	10,000,000 lbs.	.09625 " "	962,500.00	
Zinc, Die Cast	4,240,094 lbs.	.04614 " "	195,646.01	
Lead	1,359,918 lbs.	.0395 " "	53,712.85	
		Total	3,474,884.47	

The average price Rubber includes .25 CWT freight.

" " " Zinc (Die Cast) includes 1.00 CWT for quality.

COMMITMENTS

In addition to above inventories we have commitments of—

Rubber	672,000 lbs. @	.07⅛¢ lb.	
Cotton Futures	3,500,000 lbs. @	.10⅜¢ lb.	(Less Margin Calls)
Copper	10,000,000 lbs. @	.09½ lb.	
Zinc, Brass	1,000,000 lbs. @	.0355 lb.	
" "	1,250,000 lbs. @	.0445 lb.	
" "	167,000 lbs. @	.044 lb.	
Zinc Die Cast	1,200,000 lbs. @	.044 lb.	
Copper or Brass	1,000,000 lbs. @	(.08¾¢ lb. Copper — .037¢ lb. Zinc)	

[5418]

The Guide Lamp Division have future commitments on 10,000,000 lbs. Brass .723¢ lb. equal to copper 9¢ lb. and zinc .037¢ lb.

Harrison have future commitments for 287 tons 642,880 lbs. tin @ 25¢ lb.

AVERAGE MONTHLY PRICE CWT.

	RUBBER	COTTON	COPPER	ZINC	LEAD	TIN
Jan.	8.27	10.28	9.90	4.38	4.60	26.10
Feb.	7.64	10.92	9.83	4.02	4.33	26.31
March	7.65	10.87	10.02	4.01	4.28	27.07
April	6.35	10.14	9.57	3.689	4.175	25.12
May	6.42	9.38	8.81	3.31	3.65	23.20
5 mos. Avg.	7.266	10.318	9.626	3.882	4.207	25.56
June 10	6.12	8.36	8.	3.30	3.60	23.12

C. E. WILSON

[5294]

(2 E

EXCERPT FROM MINUTES OF 7494

EXECUTIVE COMMITTEE
GENERAL MOTORS CORPORATION

June 11, 1931

COMMODITY PURCHASES

Vice-President C. E. Wilson submitted a report dated June 11, 1931 (OC-990) showing purchases that have been made of basic commodities and the cost thereof. Mr. Wilson recommended that we maintain a position a year ahead on rubber so long as we can purchase it at 6-1/2 cents per pound or better. Mr. Wilson recommended buying no further cotton now and when the next crop comes in in the fall he purposes buying actual cotton for say, six months or a year, provided the price is favorable. This matter, as well as other purchases of commodities, was left in the hands of the sub-committee with power.

Defendant's Exhibit (GM) No. 293

7495

EXCERPT FROM MINUTES OF

EXECUTIVE COMMITTEE
GENERAL MOTORS CORPORATION

October 29, 1931

COMMODITIES PURCHASED

Report was presented by Vice-President Wilson dated October 29, 1931 (OC-1103) showing purchases that have been made of rubber, cotton, copper, zinc, lead and tin, together with a memorandum as to the present policy being followed in the matter of purchases of these basic materials.

Upon motion, this report was accepted and the plan outlined therein, approved.

TO: OPERATIONS COMMITTEE

7196

FROM: C. E. WILSON

SUBJECT: COMMODITIES Oct. 28th, 1931.

The following are estimated requirements for 1932 based on one million car production and period our present inventories and commitments apply against same.

	CONSUMPTION	POSITION COVERED.
Rubber	40,000,000 lbs.	Sept. 1, 1932
Cotton	11,250,000 "	None
Copper	75,000,000 "	July 1, 1932
Zinc	10,000,000 "	Jan. 1, 1932
Lead	50,000,000 "	None
Tin	3,000,000 "	Apr. 1 - 1932 Harrison Div.

INVENTORIES

Rubber	30,184,000 "	$ 1,958,478.12	Av. .06488¢
Copper	7,707,507 "	741,581.25	.09621¢
Zinc (Die Cast)	3,769,951	165,642.19	.0439¢
	TOTAL	2,865,701.56	

The average price of rubber includes .25¢ CWT freight
" " " " " " 1.00 CWT for quality.

COMMITMENTS

In addition to inventory we have commitments as follows:

Rubber	1,120,000 lbs.	@	.04 3/4¢ lb.	
Copper & Brass	33,375,000 "	"	.07¢ "	copper .035¢ Zinc
" "	1,000,000 "	"	.08 3/4¢ "	" " .037¢ "
Guide Lamp Division - Brass	9,000,000 lbs.	@	.09 1/8 "	" " .04¢ "
Harrison Radiator Div. Tin	500,000 "	"	.25¢ "	

PRICE RANGE 1 9 3 1

	RUBBER	COTTON	COPPER	ZINC	LEAD	TIN
High	.08625	.115	.105	.04125	.0495	.275
Low	.045	.055	.0675	.032	.03525	.22125
Current	.0475	.068	.07	.0325	.03525	.229

PRESENT PURCHASE POLICY

Rubber — Buying current month's requirements while price is under 5¢ to maintain present extended position.

Cotton — Buying 20,000 bales physical cotton and selling futures against same, expect to buy futures to cover around 5½¢.

5297

Copper:	Not buying: commitment for 33,000,000 lbs. just completed, supplier to carry metal until June 30, 1932 when we pay for any undelivered balance. We also received from .005/8¢ lb. to .01 1/8¢ lb. reduction in fabrication charges on copper and brass products other than wire.
Zinc	Plan to cover six months 1932 at present price.
Lead.	Trying to cover six months 1932 at present price.
Tin	Not buying, awaiting future developments.

C. E. Wilson.

Defendant's Exhibit (GM) No. 294

GENERAL MOTORS CORPORATION

INTER-ORGANIZATION LETTERS ONLY

TO Mr. J. L. Pratt,
Mr. Donaldson Brown,
Mr. C. E. Wilson. ADDRESS

FROM Mr. W. F. Armstrong. ADDRESS

7498

SUBJECT Review of Commodity Purchase Policy - Sept. 23rd, 1931.

1. RUBBER

Position	Pounds	Investment	Avg. Cost.
On hand	28,920,000	$1,907,584.49	$ .06595
Commitment	2,240,000	117,600.00	.0525
Total	31,160,000	2,013,184.49	.0648

The above represents 75% of contract requirements for 1932 based on 1,000,000 car production.
Purchase Policy - Stay out of market temporarily and await future developments of both rubber and automotive industry.

2. COTTON
Position - On hand 150,000 lbs - 500 bales -
Investment $ 18,654.21
Average price - $.12435
Basis .01878 (to be refunded by Rubber Co.)
General Motors Avg. .10556
Purchase policy - proceed with contemplated plans - purchase physical cotton in South for 80% of contract requirements for 1932 based on 1,000,000 car production. Mr. Armstrong to make trip South first of October with Rubber Company's representative to study condition of cotton harvest and formulate plans for our purchases. Purchases are to be made by Rubber Company and General Motors will not be known in the Transaction.
Estimated purchase 17,500 bales - maximum investment $600,000.

3. COPPER AND BRASS
Position - On Sept. 1st we had unshipped at Anaconda 9,088,296 lbs. @ 9 5/8¢ $873,143.88. We also have a commitment of 1,514,305 lbs. of zinc @ .0445¢ which will be used with the copper for brass products, zinc commitments will not be paid for until the metal is shipped. There is an additional commitment with the American Brass Company for 1,000,000 lbs. of copper or brass products priced on 8 3/4¢ copper and .037¢ zinc, this commitment to be paid for when shipped. The Guide Lamp Company has a commitment for 10,000,000 lbs. of brass at .0723¢ equal to 9¢ copper and .037 lb. zinc, unshipped balance July 1st, 1932 will be paid for and carried as i ventory. Including the above we will extend our position to 75% of the copper requirements for the first six months of 1932 based on 1,000,000 car production. The maximum investment in copper will be approximately $1,200,000.

5299

7499

4. ZINC - (High Grade for Die Cast)

Position - Unshipped on Sept. 1st - 4,550,000 lbs - $200,605.89 Avg., .048¢. This will cover production into January.
Purchase policy - Stay out of market and await future developments.

5. LEAD.

Position - No stock - buying month to month.
Purchase policy - stay out of market and await future developments.

6. TIN

Position - Harrison Division have commitment for requirements thru Jan. 1st at 25¢ per pound.
Purchase policy - stay out of market and await future developments.

W. F. Armstrong.

WFA
MMJ

P.S. High Grade Die Cast Zinc base 1¢ per pound more than Speltzer market .057.

5300

Defendant's Exhibit (GM) No. 295

7500

TO: OPERATIONS COMMITTEE

FROM: C. E. WILSON

Dec. 17th, 1931.

SUBJECT: COMMODITIES

The following are estimated requirements for 1932 based on one million car production and present inventory and commitment position applying to same:

Commodity	Consumption	Position
Rubber	40,000,000	Sept. 1, 1932
Cotton	10,000,000	*Open
Copper	75,000,000	July 1, 1932
Zinc	10,000,000	June 1, 1932
Lead	30,000,000	Mar. 1, 1932
Tin	3,000,000	xxJune 1, 1932

*We have purchased 10,000 bales or 1/2 of year's requirements, but sold short against purchases leaving price to be fixed when short sales are covered.

xxFigures for Harrison Division only.

INVENTORIES Dec. 1st.

*Rubber	30,324,000	.06389	1,937,547.25
Cotton	4,068,972	.06504	304,697.53
Copper	5,752,738.69	.09624	553,655.87
xxZinc	1,699,869.	.04335	73,689.86
		Total	2,869,590.51

*The average price of Rubber includes .25 CWT freight
xx " " " " Zinc " 1.00 " for quality

COMMITMENTS

In addition to above inventory we have commitments as follows:

Copper & Brass	33,375,000 lbs.	at 7¢ lb.	copper	.035 Zinc	
" "	1,000,000 "	at 8-3/4¢	"	.037 "	
" "	8,000,000 "	at 9-1/8¢	"	.04 "	(Guide Div.)*
" "	2,000,000 "	at 6-3/4¢	"	.0315 "	"
Zinc	5,900,000 "	at .04178	Lb.		
Lead	6,200,000 "	at .037	Lb.		Remy*
Tin	500,000 "	at .24	Lb.		Harrison*

*Commitments made by Divisions.

Price Range 1931

	Rubber	Cotton	Copper	Lead	Zinc	Tin
High	.08625	.113	.105	.0495	.04125	.275
Low	.0425	.055	.06½	.03525	.03125	.206
Dec. 15	.04625	.062	.06-3/4	.0355	.0315	.215

5391

Defendant's Exhibit (DP) No. 445

E. I. du Pont de Nemours and Company

SALES, BY DEPARTMENT, TO GENERAL MOTORS CORPORATION
COMPARED WITH TOTAL DEPARTMENTAL SALES

Years 1938 through 1941; 1946 through 1948

6436

Du Pont Department	1938	1939	1940	1941	1946	1947	1948
Ammonia							
Sales to G.M.	$ 302 571	$ 415 920	$ 851 477	$ 770 735	$ 691 731	$ 1 742 416	$ 2 579 964
Total Sales	13 517 087	18 244 334	25 670 013	34 636 829	41 709 412	50 320 207	87 986 924
G.M. as % of Total	2.2	2.3	3.3	2.2	1.7	3.5	2.9
Electrochemicals							
Sales to G.M.	160 609	286 711	355 604	746 029	826 729	1 019 272	1 008 511
Total Sales	15 741 271	19 636 461	23 595 047	31 833 538	38 997 383	47 687 843	50 900 456
G.M. as % of Total	1.0	1.5	1.5	2.3	2.1	2.1	2.0
Explosives							
Sales to G.M.	227	8 896	16 023	12 139	22 497	26 032	44 145
Total Sales	28 178 741	33 637 936	41 823 939	53 592 481	41 934 087	58 875 482	67 090 441
G.M. as % of Total	*	*	*	*	0.1	*	0.1
Fabrics (Division)							
Sales to G.M.	466 357	803 854	1 285 280	1 773 079	2 083 166	3 639 316	3 787 774
Total Sales	7 093 469	8 579 632	9 065 385	14 866 548	16 253 805	20 362 926	20 684 746
G.M. as % of Total	6.6	9.4	14.2	11.9	12.8	17.9	18.3
Finishes (Division)							
Sales to G.M.	6 195 229	8 760 849	11 727 061	13 525 508	10 429 852	18 938 229	21 209 642
Total Sales	31 357 134	38 514 763	44 974 778	61 204 127	75 117 079	105 266 655	118 877 018
G.M. as % of Total	19.8	22.7	26.1	22.1	13.9	18.0	17.8
Grasselli Chemicals (Includes American Zinc Products Company)							
Sales to G.M.	359 654	459 059	618 972	739 050	753 062	1 024 320	1 211 118
Total Sales	24 775 876	32 372 512	36 515 901	49 422 427	67 272 090	74 212 311	79 318 039
G.M. as % of Total	1.5	1.4	1.7	1.5	1.1	1.4	1.5
Organic Chemicals							
Sales to G.M.	96 340	138 709	140 818	170 701	69 532	83 254	99 751
Total Sales	33 839 206	42 544 957	52 324 248	75 710 435	91 787 405	94 632 256	124 642 093
G.M. as % of Total	0.3	0.3	0.3	0.2	0.1	0.1	0.1

PURCHASE POLICY

RUBBER: Not buying. Present stock will practically complete contract with U. S. Rubber which expires Sept. 30.

COTTON: Buying 10,000 Bales at 6¢ lb. or under.

COPPER: Not buying, requirements covered for first six months 1932.

ZINC: Not buying requirements covered for six months 1932.

TIN: Not buying, requirements covered for six months 1932.

LEAD: Buying current requirements maintaining present length of position.

C. E. Wilson.

Defendant's Exhibit (GM) No. 296 7502

EXCERPT FROM MINUTES OF

FINANCE COMMITTEE
GENERAL MOTORS CORPORATION

September 12, 1932

Present: Messrs. Donaldson Brown
G. F. Baker
W. S. Carpenter, Jr.
Lammot duPont
Irenee duPont
H. F. duPont
P. S. duPont
C. S. Mott
Seward Prosser
J. J. Raskob
A. P. Sloan, Jr.
George Whitney

Absent: Messrs. F. J. Fisher
J. S. Morgan, Jr.

Mr. Albert Bradley was also present.

The Chairman, Mr. Donaldson Brown presided, and the Secretary, L. R. Beardslee, recorded.

PURCHASE OF COMMODITIES

Report was received from the Secretary dated September 8, 1932 (#3438) advising of action taken by the Operations Committee in the matter of recommending that authority be granted for the purchase of basic commodities up to a total estimated amount required for 1,500,000 cars, this being an increase to the extent of the quantity required for 500,000 cars over present existing regulations, and that authority be granted to resell if it seems desirable to do so at any time.

5393

7:30 P.M.

The following resolution was offered, seconded and unanimously adopted:-

RESOLVED, that resolution of this Committee March 14, 1932, authorizing the operating executives of this corporation to make purchases or commitments of basic materials, such as rubber, cotton, zinc, and lead, etc. required to produce 1,000,000 cars, be modified to extend this authority to such purchases or commitments of such basic materials as may be required for 1,500,000 cars, as recommended by the Operations Committee, but that no authority be extended to resell any such purchases, except upon resolution of this Committee.

Defendant's Exhibit (GM) No. 299

7504

UNITED STATES
DEPARTMENT OF JUSTICE
Suite 826, 208 South LaSalle Street
Chicago 4, Illinois

60-107-37

Ferris E. Hurd, Esq.
Pope & Ballard
120 South LaSalle Street
Chicago 3, Illinois

Re: DuPont-General Motors Grand Jury Proceedings No. 9072 (General Motors and Ethyl)

Dear Mr. Hurd:

This letter confirms the understandings reached in this office between you, representing General Motors Corporation and Ethyl Corporation, and Mr. Hotchkiss and Mr. Harris, representing the Government, with respect to compliance on the part of General Motors and Ethyl with paragraph 3 of the grand jury subpoena duces tecum of August 20, 1948.

General Motors' Compliance with the August 20, 1948 Subpoena

Paragraph 3(a)--General Motors will produce this material for the period from 1938 to June 30, 1948, inclusive, except for the war years 1942 to 1945, inclusive.

Paragraph 3(b)--Compliance will be on the same basis as is provided for with respect to paragraph 3(a).

Paragraph 3(c)--General Motors will accept the figures of each of the other companies on whom this subpoena was served, as to the sales each of such companies made to General Motors, and will treat these sales figures as constituting General Motors' report on purchases.

Paragraph 3(d)--The same understanding which is set out with reference to paragraph 3(c) will apply to paragraph 3(d).

Paragraph 3(e)--General Motors will supply the required information on the following basis:

1. Re products purchased from companies other than DuPont:

General Motors will secure directly from DuPont the latter's product breakdown of the items sold by the

5395

ammonia, electro-chemicals, fabrics, finishes, and Griselli chemicals departments of DuPont to General Motors. General Motors will use this product breakdown in reporting its purchases of such products from companies other than DuPont. The report will cover the period from 1938 to June 30, 1948, inclusive, and will show by years the names of the companies other than DuPont from which each of such products was purchased and the amount of such purchases (in dollars).

2. Re products purchased from companies other than Bendix:

General Motors will report, in the manner provided for in "1" above, for the period from 1938 to June 30, 1948, inclusive, except for the war years 1942 to 1945, inclusive, on its purchases of air brakes, automotive brakes and parts, carburetors and parts, steering gear parts, starter drives, and any other product purchased from Bendix during the designated period in a quantity comparable to the foregoing items.

3. Re products purchased from companies other than Ethyl:

General Motors will report, in the manner provided for in "1" above, on all products it purchased from Ethyl, for the period from 1930 to June 30, 1948, inclusive, except the war years 1942 to 1945, inclusive.

4. Re products purchased from companies other than Kinetic:

General Motors will report, in the manner provided for in "1" above, on all products it purchased from Kinetic Chemicals, for the period from 1930 to June 30, 1948, inclusive.

5. Re products purchased from companies other than North American:

General Motors will report, in the manner provided for in "1" above, on all products it purchased from North American, for the period from 1938 to June 30, 1948, inclusive, except for the war years 1942 to 1945, inclusive.

6. Re products purchased from companies other than Remington:

General Motors will report, in the manner provided for in "1" above, on all products it purchased from Remington, for the period from 1931 to June 30, 1948, inclusive, except for the war years 1942 to 1945, inclusive.

7. Re products purchased from companies other than U.S. Rubber:

General Motors will report, in the manner provided for in "1" above, on its purchases of tires and tubes, with a breakdown between original equipment and replacements, for the period from 1927 to June 30, 1948, inclusive, except for the war years 1942 to 1945, inclusive.

Compliance by Ethyl Corporation with Paragraph 3 of the Subpoena of August 20, 1948

Paragraph 3(a)--Ethyl will supply the designated information for the years 1930 to June 30, 1948, inclusive.

Paragraph 3(b)--Ethyl will supply the designated information for the period 1930 to June 30, 1948, inclusive.

Paragraph 3(c) and 3(d)--Ethyl will accept the figures of each of the other companies on whom this subpoena has been served, as to the sales made by such companies to Ethyl, as constituting Ethyl's record of purchases from each of such companies.

Paragraph 3(d)--Ethyl will supply the designated information for the period from 1930 to June 30, 1948, inclusive.

General Understandings Regarding Compliance

I understand that you have been informed by the General Motors people that they do not have in their files any "existing compilations and summaries" as that term is defined in my letter to you of October 13, 1948. If, however, any such existing compilations and summaries should be found which are within the scope of paragraph 3 of the subpoena of August 20, 1948, the Government wishes to have such items produced.

The limitations stated in this letter are made without prejudice to the right of the Government and the grand jury to call for complete compliance with each paragraph of the subpoena of August 20, 1948.

Sincerely yours,

HERBERT A. BERGSON
Assistant Attorney General

By Melville C. Williams
Melville C. Williams
Chief, Chicago Office
Antitrust Division

Defendant's Exhibit (GM) No. 300

UNITED STATES
DEPARTMENT OF JUSTICE
Suite 826, 208 South La Salle Street
Chicago 4, Illinois

7508

60-107-37

December 17, 1948

Ferris E. Hurd, Esq.
Pope & Ballard
120 South La Salle Street
Chicago 3, Illinois

Re: DuPont-General Motors
Grand Jury Proceedings No. 9072
(General Motors and Ethyl)

Dear Mr. Hurd:

You will recall that on December 8, 1948, you, Mr. Harris, and I reached an understanding with respect to compliance on the part of General Motors and Ethyl with paragraph 3 of the grand jury subpoena duces tecum of August 20, 1948. We had had this understanding reduced to writing at the time you called to advise me that after conferring with the representatives of General Motors you felt that further limitations on the immediate scope of paragraph 3 of the subpoena were needed. You, Mr. Harris, and I, therefore, had a further conference on December 13, at which an understanding was reached with respect to further limitations for the time being on the scope of paragraph 3 of the subpoena as it applies to General Motors.

I am enclosing herewith Mr. Williams' letter to you of December 13, 1948, setting forth the earlier agreement. It is our understanding that the terms set forth in this letter of December 13 with respect to (a) compliance by Ethyl Corporation with paragraph 3 of the subpoena of August 20, 1948, and (b) general understandings regarding compliance were not affected or changed in any way as a result of the conference you had with Mr. Harris and me on December 13.

Revised Terms - General Motors Compliance
with Paragraph 3 of the August 20, 1948 Subpoena

Paragraph 3(a)--In view of your statement that the designated material for the pre-war period is either unavailable or could be provided only with great difficulty, the Government will accept for

5399

Finishes (Division)							
Sales to G.M.	6 195 229	8 760 849	11 727 061	13 525 508	10 429 852	18 938 229	21 209 642
Total Sales	31 357 134	38 514 763	44 974 778	61 204 127	75 117 079	105 266 655	118 877 018
G.M. as % of Total	19.8	22.7	26.1	22.1	13.9	18.0	17.8
Grasselli Chemicals (Includes American Zinc Products Company)							
Sales to G.M.	359 654	459 059	618 972	739 050	753 062	1 024 320	1 211 118
Total Sales	24 775 876	32 372 512	36 515 901	49 [illegible] 427	67 272 090	74 212 311	79 318 039
G.M. as % of Total	1.5	1.4	1.7	1.5	1.1	1.4	1.5
Organic Chemicals							
Sales to G.M.	96 340	138 709	140 818	170 701	69 532	83 254	99 751
Total Sales	33 839 206	42 544 957	52 324 248	75 710 435	91 787 405	94 632 256	124 642 093
G.M. as % of Total	0.3	0.3	0.3	0.2	0.1	0.1	0.1
Photo Products**							
Sales to G.M.	8 424	8 475	12 512	21 578	2 502	867	0
Total Sales	6 217 148	7 461 928	8 496 762	10 141 196	22 745 829	25 699 756	28 035 174
G.M. as % of Total	0.1	0.1	0.1	0.2	*	*	0
Pigments							
Sales to G.M.	587	140	712	1 [illegible] 0	3 931	3 530	112
Total Sales	11 983 439	13 371 220	14 334 741	19 038 786	22 709 971	31 496 024	37 215 203
G.M. as % of Total	*	*	*	*	*	*	*
Plastics							
Sales to G.M.	50 943	202 370	134 717	48 606	129 479	105 422	167 670
Total Sales	8 428 006	13 289 174	15 177 042	23 924 429	41 984 791	34 828 026	35 501 167
G.M. as % of Total	0.6	1.5	0.9	0.2	0.3	0.3	0.5
Rayon							
Sales to G.M.	3 749	6 684	16 228	22 152	23 379	45 616	51 766
Total Sales	61 297 195	80 782 485	95 833 348	130 815 833	199 872 323	250 467 514	336 594 315
G.M. as % of Total	*	*	*	*	*	*	*
Total du Pont Company							
Sales to G.M.	7 644 690	11 091 667	15 159 404	17 831 227	15 035 860	26 028 274	30 160 453
Total Sales	242 428 572	308 435 402	367 811 204	505 166 629	660 384 175	793 849 000	986 895 576
G.M. as % of Total	3.2	3.6	4.1	3.5	2.3	3.4	3.1

*Under 0.05%

**Or Predecessor, Du Pont Film Manufacturing Corporation, Not Wholly Owned by du Pont Prior to November 18, 1941.

Treasurer's Department
May 1953

the time being compliance covering the years 1946, 1947, and the first six months of 1948.

Paragraph 3(b)--Compliance will be on the same basis and for the same reason as is provided for with respect to paragraph 3(a).

Paragraphs 3(c) and (d)--The understandings set forth in Mr. Williams' letter of December 13, 1948 to you with respect to these two subparagraphs will continue to stand.

Paragraph 3(e)--You state that the material called for in this paragraph must in large measure be secured from original records which are no longer in existence for the pre-war period. Tabulations will probably have to be made up for the post-war period from original records, such as invoices and the like, and you wish to have this tabulating job limited to the major items which General Motors purchases from other LISTED COMPANIES and the competitors of such companies. We are willing to agree to the following limitations:

1. Re products purchased from companies other than DuPont:

   General Motors will provide the grand jury with tabulations reporting for 1946, 1947, and the first six months of 1948 its purchases of the following products from companies other than DuPont: anodes, electro-chemical solvents, imitation leather, coated fabrics, paints, enamel and primer, solvents, thinner, pyroxlin, and adhesives. The tabulations will cover the product breakdowns of the foregoing products, and the Government should be provided with the tabulations as to each division as well as the over-all tabulation covering the corporation and its divisions. The information will be provided by years and will set forth the names of the companies other than DuPont from which each of the designated products was purchased and the amount (in dollars) of such purchases.

2. Re products purchased from companies other than Bendix:

   General Motors will report on the basis provided for in our letter to you of December 13, 1948, except that the period may be limited to 1946, 1947, and the first six months of 1948.

3. Re products purchased from companies other than Ethyl:

   The understanding set forth in the accompanying letter dated December 13 stands.

4. Re products purchased from companies other than Kinetic:

The understanding set forth in the accompanying letter dated December 13 stands.

5. Re products purchased from companies other than North American:

The understanding set forth in our letter to you of December 13, 1948, stands, except that the period of time involved is shortened to 1946, 1947, and the first six months of 1948.

6. Re products purchased from companies other than Remington:

The understanding set forth in our letter to you of December 13 stands except that the period of time is limited to 1946, 1947, and the first six months of 1948.

7. Re products purchased from companies other than U. S. Rubber:

The understanding set forth in our letter to you of December 13, 1948 stands, except as to the period of time covered. On this point General Motors is to provide the specified information for as much of the period of time from 1927 to June 30, 1948, inclusive, as General Motors has records. If General Motors has no records for any portion or portions of that period of time, an officer of General Motors is to provide the grand jury with a certification as to that fact.

Sincerely yours,

HERBERT A. BERGSON
Assistant Attorney General

By _____
Willis L. Hotchkiss
Acting Chief, Chicago Office
Antitrust Division

Enclosure No. 321424

Defendant's Exhibit (GM) No. 301

GENERAL MOTORS CORPORATION DUPONT GRAND JURY INVESTIGATION

7511

December 20, 1948

Mr. Melville C. Williams, Chief
Chicago Office
Anti-Trust Division
208 South La Salle Street
Suite 826
Chicago 4, Illinois

Re: Grand Jury Proceedings
No. 9072

Dear Mr. Williams:

This will acknowledge receipt of your letter of December 13 and Mr. Hotchkiss' letter of December 17.

The letters taken together correctly state the agreement which we have regarding the further compliance by General Motors Corporation with paragraph 3 of the subpoena dated August 20, 1948.

With respect to Ethyl Corporation, I am not in a position at this time to confirm the arrangement as outlined in these letters. I have submitted the suggestions contained in the letters to Mr. Page, the New York attorney for Ethyl Corporation, and am awaiting word from him as to the ability of Ethyl Corporation to comply with the subpoena in the manner set forth in the two letters. You will be advised as soon as I hear from Mr. Page.

Sincerely yours,

FEH:tk
cc: Henry M. Hogan, Esq.
General Motors Corporation
3044 West Grand Boulevard
Detroit 2, Michigan

Mr. Henry F. Herbermann
1775 Broadway

5219